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STERILIZATION OF THE UNFIT: THE LEGAL ASPECT.¹

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THE first thing that the lawyer does when he endeavours to solve a difficult problem is to define the terms in which the problem is stated. Fortunately for me, most of the terms used in the problem on which you have asked me to speak to you are self-explanatory and do not require a more exact definition; but one of them does need examination—what is meant by "the unfit"? I can suggest several meanings. It may mean the person who ought to be debarred from procreation for physical reasons, because he suffers from some transmissible and incurable disease of the body. It may mean the

person whose mind is diseased, whose mental defects, if they are transmissible, ought not to be allowed an opportunity to reappear in another generation. It may also mean the economically unfit; that is, those whose lack of means makes it difficult or impossible for them to provide adequately for the upbringing of more than a very small number of children. Finally, if we are prepared to follow Haldane and Huxley in their ectogenetic visions, it may mean the socially unfit or unwanted; if manual labourers tend to beget manual labourers, of whom there is already a supply greatly in excess of the demand, we should limit the production of manual labourers by sterilization or other means. Some critics might be unkind enough to say that sterilization ought therefore to be practised on medical and legal practitioners to prevent them from adding to the superabundance of lawyers and doctors. For practical purposes, however, we can eliminate from our discussion this evening the economically unfit and the socially

¹ Read at a meeting of the Western Australian Branch of the British Medical Association on October 17, 1934.

unwanted, and concentrate upon the physically and mentally unfit and upon the person who voluntarily seeks sterilization.

It seems to me that this problem really involves a number of questions. First, is the medical practitioner legally justified in sterilizing a patient in the interests of the health, possibly even of the life, of the latter? Second, is there at present any legal provision in Western Australia for the sterilization of persons suffering from some transmissible and incurable disease of body or mind, and if there is not, do the interests of society as a whole demand the introduction of some such provision? Third, what is the legal position of a medical practitioner who, at the request of a mentally defective patient or of the patient's relatives or guardians, agrees to sterilize the patient? Finally, what is the legal position of a medical practitioner who is asked to sterilize a person who is physically and mentally healthy, but who wishes to avoid procreation for personal reasons, or a physically diseased person who wishes to avoid transmitting his defects?

Before answering those questions I propose to give you a very brief outline of the sterilization laws in force in other parts of the world. If you already know the facts, you must not blame me for repeating them to you; you must censure your Honorary Secretary, who asked me to say something to you of foreign legislation and by inference suggested that you are entirely ignorant of that legislation. If you feel disposed to take any disciplinary measures for that slur upon your knowledge, you must direct them against your Secretary and not upon my guiltless head.

The United States of America, that fertile country of experimentation, is well to the fore with sterilization laws. Twenty-eight of the States have made such provision; but there is great variation in the scope and effect of these laws. Pennsylvania first thought of sterilization, in 1905; but the law, although approved by the legislature, was vetoed by the governor, who must have been a good mid-Victorian or a member of the Comstock society. The honour of first passing and enforcing a sterilization law goes to Indiana, which in 1907 permitted an operation to be performed on certain classes of criminals and upon idiots whose mental condition was not thought likely to improve. During the next two years an average of sixty-one persons were sterilized; then Indiana dropped out of the running altogether, and in 1920 the law was removed from the statute book by being declared unconstitutional. It is rather curious that, according to statistics furnished by the Commonwealth Department of Health, sterilization for eugenic reasons was being practised in Indiana before it was legally sanctioned for criminals and lunatics, and that during the eight years preceding the sterilization law nearly 100 males were operated on annually—forty more than the average of compulsory sterilizations. Of the other States, California easily holds pride of place in its rigorous enforcement of the law which it enacted in 1909; up to the

end of 1929 an average annual number of 323 had been sterilized; of the total number, 3,636 were males and 3,151 females. In fact, California has sterilized more persons than all the other States put together. Three degrees further north, the State of Washington passed a sterilization law in the same year as California; but in twenty years it has only sterilized one male and eight females. It may be that the concentration of the motion picture industry in California accounts for the apparently high ratio of mental defectives in that State. On the other hand, it may be that Washington is so full of mental defectives that it is hardly worth while sterilizing any of them.

A map of the United States, on which the sterilization States are marked in a distinctive colour, is not without interest. Speaking generally, sterilization is the rule in the west and northern middle west; in the east and south it is the exception. One would have expected to find sterilization laws in the thickly populated industrial areas, where criminals and mental defectives are likely to be found in great numbers; but that is not so. Nor do we find sterilization measures in the States where the negro population is greatest, except in Virginia and North Carolina; again somewhat surprising, because one would have thought that castration—not necessarily by surgical methods—as a prelude to lynching would have appealed to the southern mind. You would not expect sterilization measures in Massachusetts, the cradle of American culture; nor will you find them. You will look in vain for such measures in New York State; you will find that Illinois, despite Chicago—the home of the gangster and the gunman—has never considered sterilization as a means of reducing its criminal population.

Those States which have adopted sterilization laws are by no means uniform in their legislation. In most of them the declared object of sterilization is eugenic; in fourteen it is also therapeutic; and in three only is it punitive, as part of the penalty imposed for the commission of certain crimes. In twenty-seven States the feeble-minded may be sterilized; in twenty-five, the insane also; and in nineteen the epileptic also comes under the ban. You will see that there is a great deal of overlapping in those figures; some States apply their laws to all three classes, others to two, some to only one. In South Dakota and Alabama, for example, only the feeble-minded can be sterilized; the lunatic is left alone because he is detained permanently under observation. California goes furthest, in providing for the sterilization of any institution inmate who suffers from a disease of a syphilitic nature. The normal methods are vasectomy and salpingectomy; castration is permissible in some States, but forbidden in others. In most cases a medical board, from which in some instances an appeal may be taken to the ordinary courts, determines whether sterilization shall take place; six States require the consent of the patient or of his relatives or guardians, although in three of them the indi-

vidual, if consent is refused, may be required to appear before the courts to show cause why he should not be sterilized. Voluntary sterilization is not uncommon; of females where pregnancy might endanger life; of males when it is desired to limit the family; but such sterilization is nowhere regulated by law. As to the results, American experience seems to show that sterilization does not result in greater sexual promiscuity or in an increase of venereal disease.

Outside the United States sterilization of the physically or mentally unfit makes slow progress. It is legal in one Canadian province, Alberta, since 1928; in the Swiss Canton of Vaud since 1929; in Saxony, but only with the free consent of the patient or his relatives or guardians. Germany has recently passed legislation in conformity with the Nazi aim of producing racial purity; a "Law for the Prevention of the Transmission of Hereditary Disease" was promulgated on July 14, 1933. Its first paragraph reads as follows:

Whoever is the bearer of an hereditary disease can be sterilized by a surgical operation if the experience of medical science goes to prove that there is great likelihood that his descendants will suffer from serious physical or mental disease.

Hereditary diseases are defined as imbecility, schizophrenia, *folie circulaire*, hereditary epilepsy, hereditary St. Vitus's dance, hereditary blindness, deafness, or physical deformity. Severe and incurable alcoholism is also a ground for sterilization. The person to be sterilized may himself apply for the operation to be performed; or he may be summoned before a special court, which after an inquiry held in camera may order sterilization against the wishes of the person to be affected thereby.

In England, public opinion is as yet too conservative to approve legislation sanctioning sterilization and much the same might be said of the Australian States, where no such provisions yet exist, although a clause permitting the sterilization of defectives was inserted in the Mental Defectives Bill some years ago. (I am sorry that it will be necessary to continue monotonously using the words "mental defectives"; but my remarks might be open to misconstruction if I shortened them to "m.d.'s"!.) Therefore, in the absence of express statutory provision in this State, I must endeavour to answer my own questions in the light of any other enactments that may have some bearing on the matter.

The first question, you will remember, was whether a medical practitioner is legally justified in sterilizing a patient in order to preserve health or life. There is little doubt in my mind that such an operation is legally justified; section 259 of our criminal code provides that:

A person is not criminally responsible for performing, in good faith and with reasonable care and skill, a surgical operation on any person for his benefit, if the performance of the operation is reasonable having regard to the patient's state at the time and to all the circumstances of the case.

The law will not as a rule inquire very deeply into the expediency of or the necessity for a surgical operation; but if a medical practitioner should sterilize a patient and thereafter find it necessary to rely upon section 259, I do not suppose he would find much difficulty in inducing any number of his professional colleagues to testify, quite sincerely of course, that the operation was vitally necessary.

The first half of the second question has already been answered by my statement that there is no provision in our law for the sterilization of the mentally or physically unfit; the second part of the question, whether the interests of society demand the introduction of some such measure, it is not my function to answer.

The third question: What would be the position of a medical practitioner who, at the request of a mental defective or of the parents or guardians of such defective, performed a sterilization operation on him? My opinion is this: That unless the operation is deemed necessary in the interests of the sufferer's health, so as to come within the protection of section 259, the surgeon should not operate. It may be quite true that it is in the interest of society that such a person should be rendered incapable of procreating and transmitting his or her defects; but it is not for the individual medical practitioner to say what the interests of society require. It is no protection whatever to him that parent or guardian asks for the operation to be performed; he would still be liable, in my opinion, to an action for damages at the suit of the mental defective, and he might very easily find himself infringing the criminal law, for reasons which will be given later. But suppose the mental defective himself purports to consent to the operation? It will be a question of fact whether that consent was real or not. If the mental defective does not truly understand and appreciate the nature and consequences of the operation which he is to undergo, his consent is worth nothing at all; but if he is in fact capable of comprehension, and voluntarily consents to sterilization, then his case is comprised in the reply to the fourth question, which I shall now endeavour to answer.

That question is: "What is the position of the surgeon who is asked by a patient, who wishes to avoid procreation for personal reasons, but is not in any way diseased, or who is physically or mentally diseased and wishes to avoid transmitting his defects, to sterilize him? Civilly the surgeon incurs no liability for acting in accordance with the patient's request; the difficulty lies in determining whether he incurs any criminal responsibility. Our criminal code was enacted in 1913, before sterilization was even thought of in this country; it therefore does not mention the word, nor does any subsequent enactment.

Section 4 of the Act establishing the criminal code provides in effect that no person is to be charged with or tried for any offence unless such offence is described in the code or in some other

Act which is in force in Western Australia. Since there is no other Act dealing with sterilization, it seems to follow that we must see if there is anything in the criminal code itself which, by implication, makes such an operation illegal. It is an offence under section 294 to inflict grievous bodily harm on another person with the intention of maiming, disfiguring or disabling such person; it also seems to be an offence to inflict such harm on one's self—but that seems immaterial, because I should imagine that even the hardest of surgeons would hesitate to perform vasectomy on himself.

Does a surgeon who sterilizes a patient at the latter's request inflict grievous bodily harm upon him with intent to maim, disfigure or disable him? There is another section, 297, which punishes the unlawful infliction of grievous bodily harm without inquiring into intent; but I think we can leave that out of consideration, because it seems to contemplate harm arising accidentally, without any deliberate intent, out of some act that is wrongful *per se*; and there can be no doubt that the surgeon who performs a sterilization operation does intend certain results. The question resolves itself into this: Does he inflict grievous bodily harm, and does he do it with intent to maim, disfigure or disable? Kenny, in his "Criminal Law", says that an injury may amount to serious bodily harm without being either permanent or dangerous, if it is such as seriously to interfere with comfort or health. I suggest that vasectomy certainly does not seriously interfere with comfort or health; I am not so sure about castration or salpingectomy, but my own feeling is that the section contemplates some injury, the precise nature of which is not foreseen, and which is certainly not inflicted in such circumstances as attend a surgical operation, where the object is to preserve the patient from harm and not to inflict it.

The surgeon does everything humanly possible to avoid serious bodily harm; the person who attacks me with a bottle or throws vitriol in my face wants to inflict serious bodily harm on me. But even if we assume that castration and salpingectomy do constitute, at law, the infliction of serious bodily harm, it must be inflicted with the intent to maim, disfigure or disable, in order to come within section 294. Maiming has been defined by an old writer as "the cutting off, or disabling, or weakening a man's hand or finger, or striking out his eyes or foretooth, or depriving him of those parts the loss of which in all animals abates their courage". I do not think vasectomy or even salpingectomy are maims, though castration may be if it abates the courage, as to which I have no personal experience. Disfigurement is illustrated by such acts as cutting off an ear, the nose, and so on; even the removal of the testes could hardly be regarded as a disfigurement, since disfigurement is something that can be observed, and the law-abiding citizen does not reveal his testes—or his lack of them—to the public gaze. Is sterilization a disabling of the patient? In one sense it is, inasmuch as the patient is not able

immediately to resume his or her normal tasks; but if I go to a surgeon and ask him to remove a perfectly healthy pair of tonsils, or an appendix which has always been remarkably inoffensive, that is equally a disablement in the narrowest sense of the word.

It is true that sterilization permanently disables from the performance of a physical function, namely procreation; but is the medical profession unanimous in declaring that neither tonsils nor appendix have any function to perform, and therefore that their removal does not disable the patient from the performance of some physical function? I am treading on dangerous ground here; but has medical science reached such a stage that it can affirm categorically that tonsils and appendix are mere useless excrescences with no function whatever to perform? Unless the medical profession is prepared to make that affirmation, I can see no difference in kind, though there may be in degree, between vasectomy, salpingectomy, tonsillectomy, and appendicectomy. From that, and from the fact that all our old books and authorities of the law seem to agree that a disablement is some injury that makes a man less capable of protecting himself and his country—which can scarcely be alleged of the normal sterilization operation—I conclude that sterilization, performed at the request of a patient who understands the nature and results of the operation and freely consents thereto, does not constitute a disablement within the meaning of section 294, and does not involve in criminal responsibility the surgeon who performs the operation.

STERILIZATION OF THE UNFIT: THE MEDICAL ASPECT.¹

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EARLY this year a report appeared by a committee called the Brock Committee, which went into the question of sterilization very carefully. Since then the matter has been widely discussed in medical journals and elsewhere, and all I can give you is based on that report and on various essays and articles which have appeared upon it.

The first point is with regard to fertility, the fertility of the insane and the fertility of the mentally defective. Is the fertility excessive? So far as the insane are concerned the fertility is not great, and is not sufficient for this group to increase in numbers, even if no eugenic measures obtained; but what is the position with regard to the mentally

¹ Read at a meeting of the Western Australian Branch of the British Medical Association on October 17, 1934.

defective? The belief that fertility of the mentally defective is excessive has been almost a popular tradition. A Royal Commission in 1904 estimated the incidence of mental defectives in England as 4.6 per 1,000 of the general population, and the Wood Committee in 1924 estimated the figure as 8.6 per 1,000. It does not necessarily follow that the numbers have doubled, because the increase is partly due to more thorough investigation.

Dr. A. F. Treadgold, who has investigated this matter, and who speaks with authority, has reported his own investigations in *The Lancet* in 1929. His investigations led him to the conclusion that there had been an absolute as well as a relative increase in the number of defectives in the total population, and he considered that this was partly due to lowered infantile mortality and also partly due to the lowest social strata having a higher birthrate than the average.

We are all familiar with the family histories of the Jukes, Nams and Kallikaks, which have been given such prominence when the question of hereditary has been considered, and these family histories appear to show great fertility in defective stocks. Briefly, these family histories are as follows: The descendants of the morbid Juke family were traced through five generations, and it was found that of 709 individuals, the great majority were vagabonds, paupers, criminals and prostitutes. In the case of the Nam family, 784 descendants were traced, and the majority were found to have sunk to the lowest social level, and lived under the most wretched conditions, with alcoholism, immorality, epilepsy and insanity very prevalent among them.

The descendants of Martin Kallikak and his wife were normal, but he had an illegitimate child by a feeble-minded girl and among the descendants from this union there were 222 feeble-minded. Although these family histories were rejected by the Brock Committee as having no scientific value, there are many others which cannot be dismissed so easily. A number have been recently published by Mr. E. J. Lidbetter, but I have not been able to obtain his book. One of these described briefly in *The Lancet* recently is typical of many.

A couple was allowed to marry. The man was subnormal and the woman was a low-grade mental defective. They had six children, of whom two only survived and were reared in Poor Law schools. An inquiry into the antecedents of the couple showed that the father was one of ten children, four were dead, and he, with all the remainder, had been reared in board schools. His mother was of low mentality and was one of a family of fourteen children, of whom eight had died in infancy. The woman also had a very bad family history. She was one of fifteen children of whom ten had died in infancy and childhood, two before twenty, and there were three survivors, of whom two, including herself, were low-grade mental defectives.

The union of such stocks which had thrown a great burden on the State should surely have been discouraged, or there should have been some means of preventing parenthood. Family histories such as these are largely responsible for belief in the exces-

sive fertility of the mentally defective, but the Brock Committee approached the matter from a different angle. They investigated the family histories of a large number of children of mental defectives and they found no evidence of abnormal fertility. This Committee arrived at the opinion that the fertility of defectives was not excessive, despite occasional family histories which appear to indicate the contrary. It considered that the widespread belief in the abnormal fertility of defectives was a myth, and formed the impression that mental defect was increasing, but not rapidly, and that there was no ground for an alarmist belief that there was wholesale racial deterioration.

With regard to heredity itself, practically all the witnesses before the Brock Committee agreed that this was a great factor in the causation of mental disorder and defect. As poor environment is almost always associated with a bad heredity, this factor must also play some part in the majority of cases.

The chief considerations produced by this committee in support of the opinion that heredity was so important, were given as follows: Firstly, the committee found a substantial proportion of patients in mental hospitals and institutions with one, two or more relatives who had suffered from some form of mental disorder or defect. If the same incidence prevailed in the general community, the number of mental patients would be considerably greater than it is. There were many families with an exceptionally high incidence of mental disorder and defect. It was largely on this ground of familial concentration that the committee based its belief that mental disease and defect are to a great extent inherited conditions.

Secondly, the committee also inquired into the mental condition of 3,733 children of mental defectives. The death rate was high (22.5%), probably due to parental inefficiency. Of the survivors, over 40% were either defective or retarded.

Thirdly, 1,600 families each containing one defective child were investigated. With both parents normal, 70% of children were normal, with one subnormal parent (including epileptics and insane) 57% of children were normal, while with both parents subnormal, 41% of children were normal. These investigations afforded strong support for the belief that lack of intelligence is largely inherited. On the other hand, it is to be noted that parents of defective children are generally normal, and often very intellectual, and it is rare that more than one member of a family is affected. Other statistics have been produced. Those of Fernald are a case in point; his statistics showed that all the fifty children of twenty-seven mentally defective women were normal.

The Brock Committee, however, having considered much evidence, came to the conclusion that heredity plays a large part in the causation of mental disorder and defect, and there are few who would disagree with this.

The great difficulty with regard to any sterilization proposal lies with those people who are not defective, but who carry the seed of the defect unknown even to themselves until too late; that is, for one carrier of mental defect who is himself defective, it is estimated that there are ten who are not defective. The great majority of parents of defective children are therefore normal. Of course, it does not follow from this that defective parents seldom have defective children. Although the great majority of carriers are normal, the Wood Committee found a large number of defectives in quite restricted family groups, in which the proportion of insane, epileptics, paupers, recidivists, unemployables and prostitutes exceeded the average. This was called the social problem group. Like attracts like, and there is a tendency for defect to be concentrated in a particular class in the community, and the fertility of this class at any rate is above the average.

It is difficult to see what can be done with carriers, even in such family groups. In the absence of defect they are hard to distinguish, and even if distinguished it is unlikely that they would practise birth control, or submit to voluntary sterilization; and compulsory sterilization of this group on a large scale is out of the question. Since ten carriers out of eleven could not be distinguished as such, and would not be sterilized under any system, it follows that sterilization can play but a small part in the prevention of mental disorder and defect. Nevertheless, all the members of the Brock Committee, with the exception of one, agreed that serious social and economic results were likely to result from the breeding of defectives. On social grounds alone, defectives make inefficient parents and should not have children.

Should sterilization, therefore, be compulsory? Some useful information should be available as a result of the American experience, and some also from the German scheme, although the latter has been in force only since the beginning of this year. Professor Beasley has mentioned the sterilization law existing in the American States. Up to January, 1933, 16,066 operations had been performed. In California, 8,504 operations had been recorded up to 1930, four-fifths of these having been upon insane, and one-fifth upon mental defectives. The operations have caused neither physical disability of the patient nor any change in sexual feelings. As Professor Beasley has said, in California sterilization is compulsory for any person in a State hospital or home with mental disease, which may have been inherited, and which may be transmissible to descendants.

The Act also contains certain provisions for the sterilization of recidivists, moral or sexual degenerates or perverts. These penal provisions might have been expected to have some effect on the act as a eugenic measure, but this is not so, and there has been a steady increase in the number of voluntary sterilizations in that State. Despite the

compulsory clause in the Act, the consent of the patient's relatives is always sought and generally obtained before sterilization is done. It is important to note that, despite the fact that the operation is compulsory, the consent of the patient's relatives is obtained before sterilization is done.

Sterilization has had the result that a considerable number of female mental defectives have been discharged and have been able to marry and live more stable and competent lives. This does not apply to defective men who were undersized and unattractive; and of 136 such marriages, only five were by men. These marriages were considered to be as successful as the average successful marriage rate in California.

The parole rate of mental defectives had not been increased to any appreciable extent, and a considerable proportion of sterilized insane and mental defectives were still under institutional care. The Brock Committee thought that this was very unsatisfactory. It considered that there was no justification for sterilizing defectives who were unfit for community life. One might have expected an increase in sexual promiscuity and venereal disease, but this has not been so. Rather, there has been a tendency for these to decrease. All medical officers, probation and parole officers, state they are well satisfied with the operation of the Act.

On the whole, there does not appear to have been very marked results. The insane, even if unsterilized, propagate too little to increase the size of their group, and the number of defectives on parole has not been very appreciably increased. Some defective women have been able to live successful married lives outside institutions and the birth of some defective children, even though the number may not be large, has been prevented. Mr. E. Gosney, who carried out the Californian investigations, considered that the Act was an invaluable supplement to recognized eugenic measures.

With regard to the German scheme, a little information is available in *The Lancet* of June 9, 1934. In this Act there are nine conditions, including schizophrenia and manic depressive insanity, which justify voluntary or compulsory sterilization, and these diseases have been made notifiable. But the diagnosis of mental disease is more difficult than that of common physical disorders, and German doctors are beginning to hesitate to diagnose these diseases, preferring some less compromising diagnosis. Also it is stated that people are beginning to be afraid of entering public mental institutions because of the risk of compulsory sterilization before discharge, and also that people are inclined to conceal important elements in the family history. If this goes on, it will be difficult to inquire into the genetics of mental disease which, above all, requires accurate family histories. Although eugenic and punitive sterilization are carefully distinguished by the Germans, the

existence of punitive sterilization tends to prevent people coming forward for voluntary sterilization.

The difference between the two countries appears to me to lie chiefly in the method of the administration of the Acts. In America a sympathetic administration has helped to make public opinion favourable, while in Germany a sterner administration appears to be having the opposite effect. Other speakers may have more information about Germany than I have, and may be in a position to give a different opinion.

The Brock Committee doubted the wisdom of compulsion, because, in certain American States, without the support of public opinion, compulsion became ineffective, while in other States with a favourable public opinion compulsion was unnecessary. This committee thought the legislature would not feel justified in compelling persons to submit to sterilization, unless it could be shown beyond reasonable doubt that some at least of the offspring would be mentally defective, or would develop mental disorder, and no such proof could be produced.

There are occasions on which compulsion appears advisable, but the advantages of coercion appear to be outweighed by its disadvantages, and its success or otherwise appears to be intimately bound up with the manner in which the compulsory clauses are administered.

The opinion of the Brock Committee after careful investigation of the whole subject was that there were adequate grounds for sanctioning sterilization of defectives and mentally disordered. Its principal conclusions were that voluntary sterilization should be legalized in the case of, firstly, a person who is mentally defective or who has suffered from mental disease; secondly, a person who suffers from or who is believed to be a carrier of a grave physical disability which has been shown to be transmissible; thirdly, a person who is believed to be likely to transmit mental disorder or defect. Before sterilization is sanctioned for a mental defective, fitness for community life should be ascertained, and those who have been sterilized should receive the supervision which their mental condition requires.

My own opinion is that voluntary sterilization with adequate safeguards should be legalized.

STERILIZATION OF THE UNFIT: THE PSYCHIATRIC POINT OF VIEW.¹

By E. J. T. THOMPSON, M.A., B.Sc., M.B., Ch.B. (Glasgow),
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THE problem of the "sterilization of the unfit" would perhaps be better termed "sterilization for

the prevention of the procreation of the unfit". It is a problem of public health and involves the knowledge (i) of causation; (ii) of the means by which "unfitness" is transmitted. From the aspect of the psychiatrist, the problem is most complicated and full of pitfalls. In the short time at our disposal only a *résumé* of salient points can be attempted.

For the purpose of this discussion, it will perhaps be useful to deal with the mental aspect under two heads: (i) Mental and moral defect; (ii) mental disorder.

It seems somewhat paradoxical that in a State where no mental deficiency Act exists, we should discuss the sterilization of the mental defective. At most we can declare a person insane or an idiot and the problem of sterilization hardly affects this lowest grade of mental defective.

The alarmist propaganda of recent years that mental deficiency and disorder are greatly on the increase is false. Dr. McWhae has already given you the outline of the Brock report in that direction. Improved methods and more thorough investigation have produced statistics showing mental defect in excess of previous estimates. But even with these improved methods, the statistics for Scotland for the period 1901-1931 show an increase in mental hospitals of only thirty-seven per 100,000 of population.

The incidence of mental defect in a community will vary with the standard of normality adopted, with the interpretation of the word defective and with the degree of ascertainment. In different countries it is found that the estimate varies, due largely to the interpretation of the word defective. In Germany, the high percentage, I think in some States as high as 8%, includes the "dull and retarded" as well as those states of feeble mindedness incorporated in the British *Mental Deficiency Act*. British and American figures estimate that from 0.5% to 1% of the population are mentally defective. Even on the lowest estimate, the number of defectives for this State would be approximately 2,000. Of this number only a small percentage are in institutions. On the British figures only 6% of its estimate of a quarter of a million defectives are under institutional care. Confinement to an institution is resorted to mainly when anti-social traits are added to a state of mental deficiency. The other 94%, of whom a large number are well adjusted high grades, are free to propagate the species.

It must be realized that the term "mental defect" is legal rather than medical, sociological rather than clinical. It is a group term within which there are numerous clinical forms, the causation of which varies within wide limits. Our knowledge of the aetiology is unfortunately rudimentary, but may be divided under two main heads—heredity and environment—environment being used in its

¹ Read at a meeting of the Western Australian Branch of the British Medical Association on October 17, 1934.

widest sense of anything affecting the individual after fertilization of the ovum.

There is a wide divergence of opinion as to the parts played by these two factors in causation. Certain environmental factors, such as cerebral injuries, ante-natal, natal and post-natal, meningeal and encephalitic infections, congenital syphilis *et cetera*, are fairly definite as physical causes, and the hope for prevention of these lies in ante-natal and post-natal clinics and general preventive measures. But those of known environmental causation form but a small percentage of cases. The most recent figures of an investigation at present being carried out at Colchester indicate that only 9% are due entirely to environment and 29% entirely to heredity. The remaining 62% of mental defectives must be considered as those in whom exogenous factors have played their part on an inherent instability. Foreign investigations on the same lines have led to conclusions much the same in effect. It would therefore seem that in 90% of mental defectives heredity plays a part. Even granting that these figures are approximately correct, the problem is far from solved. Mental defect is not necessarily bred from mental defect. Sporadic cases of the genetous type occur where the family history is faultless, and in those in which heredity traits are detected, the mental abnormality in the family varies through the neuroses, psychoneuroses and psychoses, the borderline cases, the "dull and retarded" and mental defect itself.

Dr. McWhae has already given you the figures of an investigation instituted into the offspring of known defectives. In round figures two-thirds of the number were dead, defective or subnormal, one-third reached normal standard and there is little doubt that a number of these will become psychotic. Even though some cases may be of environmental causation, when it is remembered that mental defectives in the majority of instances are unfitted for parenthood, the necessity of preventive measures of a compulsory nature seems to be indicated.

The sterilization of known mental defectives will have but a small effect in reducing mental deficiency. Only 5% of mental defectives have a mentally defective parent. The majority of the mentally deficient are the product of subnormality and of neuropathic and psychopathic inheritance. That sterilization can ever take the place of institutional care and other forms of supervision allowed by mental deficiency Acts is a false idea. A mental defective is committed to care mostly because of some anti-social trait and sterilization will not cure this. Sterilization can only be used as an adjunct to prevent the procreation of unstable stock. To be of any effect ascertainment of the mentally defective population in a thorough manner is essential. Even in Britain, where ascertainment is a compulsory duty of local authorities, the number of known defectives is only a little more than half the estimated number.

While mental defect and mental disorder are groups with a fundamental distinction, it has already been indicated that they are not completely separable. Mental defectives of the higher grades show manifestations of mental disorder, and the offspring of the mentally disordered are sometimes defective.

The problem of the prevention of mental disorder does not differ greatly from that of mental defect. Insanity is a legal entity, but from the medical standpoint mental disorder embraces a wide range of diseases. The classification is still in a state of change and varies in Britain, America and Germany. Our knowledge of causation is in many cases meagre, but, as in mental defect, resolves itself under two main heads—heredity and environment. The physical basis of certain forms, for example, the post-encephalitic, dementia due to arteriosclerosis, general paralysis of the insane, and other gross brain conditions due to syphilis, the toxic psychoses *et cetera*, form fairly definite groups due to exogenous causes, though in some of these endogenous factors may play a part. But those due to heredity alone or heredity with environment form by far the major portion of mental disorders.

The incidence of three to four certified patients per 1,000 population is not a true indication of mental disorder in our midst. There is some truth in the saying that there are as many outside as inside the institutions. In addition to these there are the borderline cases. The part played by heredity in causation has been variously estimated; but to one who over a period of years interviews the relatives of patients, there is little doubt that hereditary instability, varying from mere eccentricities to true psychoses, plays a large part. The superadded stresses and strains of environment may be exciting factors, but they are less likely to cause mental breakdown in those of sound heredity.

Certain difficulties, however, present themselves. No mental disease, except certain rare forms such as Huntington's chorea, breeds true to form, nor are Mendelian laws applicable. Manic-depressive psychosis and schizophrenia show a marked familial incidence, but also give rise to other forms of disorder and mental defect. In families with epileptic traits, schizophrenia and mental defect are not uncommon. We know little of the mode of transmission; we are unable to predict the effect of heredity on offspring, except to say that a predisposition upon which adverse environmental conditions may have their effect, is likely to be transmitted. We must also remember that genius is often the product of unstable stock and the world might have been deprived of much of its finest in art, science, literature, music, history, and theology, had sterilization been in operation over the last two thousand years.

Time does not permit discussion from the sociological aspect. The Brock Committee has been impressed with the social wastage and the indi-

vidual misery entailed through mental inefficiency, and has recommended a system of voluntary sterilization, both in mental defect and in mental disorder. The reasons for their decision against compulsion can be stated shortly:

1. Our present state of knowledge is inadequate. We are unable to say that the offspring of any particular union will be mentally abnormal.

2. In other countries where sterilization is operative compulsory measures cannot be enforced without the support of public opinion. If public opinion is favourable voluntary methods are equally effective, and are the only ones practicable.

3. Any idea of compulsion associated with mental defect would increase the difficulties of ascertainment, as parents would tend to hide the defect.

4. Compulsory sterilization as a condition of discharge from mental institutions would have the effect of deterring those patients suffering from early and recoverable conditions from entering on a voluntary basis.

It is admitted that in certain cases prevention of propagation should be compulsory, but these, the committee considers, could be better dealt with by methods of segregation. At the same time the committee is unanimous in its opinion that there are adequate grounds, medical, social and economic, for sanctioning sterilization on a voluntary basis in the case of the mental defectives and the mentally disordered, and even for encouraging such a procedure.

But even granting that this is sound and practical, we are but on the fringe of the problem. There is still the question of the so-called carriers—the subnormals and the borderline cases—who vastly outnumber the mentally abnormal and from whose offspring the majority of mental ineffectives come. It is in this group that the compulsory method would be most difficult and well nigh impossible. The committee have therefore recommended that the right to sterilization should extend to all those whose family history would indicate the possible transmission of mental abnormality.

Certain facts seem obvious: Firstly, that the public as a whole does not understand the content of the word "sterilization"; that it is confused with castration and its deleterious effects on the individual. A not unpopular opinion is that sterilization is a curative measure. As a matter of fact, just last Sunday a woman came to see me and asked why I did not sterilize the patient. I said there did not seem to be any need for sterilization. She said, "Oh, but in America they cure cases by sterilizing them". That idea is fairly popular.

Secondly, that the time will not be ripe in this State for the introduction of either voluntary or compulsory sterilization until the public are educated by an intensive campaign to a fuller under-

standing of the whole subject; for without public support and cooperation the introduction of sterilization, whether on a voluntary or compulsory basis, will fail to achieve the object in view.

Thirdly, that ascertainment of the mental defective is essential to the advocacy of sterilization. We have no Act in this State to deal with mental defection and little institutional accommodation for those who need it.

Fourthly, that sterilization can never be a substitute for institutional and other care. The number who could be discharged from our institutions, provided they were sterilized, is extremely small, but none the less the advisability of sterilization of those fit for discharge is to be commended.

Lastly, that if legislation to this effect is introduced, the strongest safeguards will be necessary in the interests of the patient and the doctor, and to prevent the abuse of a eugenic measure.

SOME ASPECTS OF STERILIZATION OF THE UNFIT.¹

By R. H. CRISP, M.D., B.S. (Melb.),

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THE reason for the discussion tonight is that cases have been brought up before this Association and to the Council from time to time, cases in which inquiries are made as to the law in this State regarding sterilization. There are cases of patients who ask for sterilization, and of patients whose guardians or parents ask for sterilization. It was thought that a discussion of this nature might help to clear all our views on the subject in view of the continental experiments and the recently published Brock report.

The Hereditary Factor.

Truly hereditary disease implies a change in the original *Keim*-plasma, usually termed by the authorities an *Anlage*, the nature of this change being unknown. Changes in the original *Keim*-plasma can be produced by X rays, and it is thought that some change may be produced by syphilis, though that is not proved.

The laws of heredity are obscure. The Mendelian laws endeavour to postulate the probability of inheritance of the *Anlage* in certain types of characteristic. What knowledge we have of heredity has been acquired by close study of family trees and by animal and plant experiment. The *Anlage* in *Keim*-plasma may be latent. A dominant Mendelian characteristic implies that one parent has the characteristic developed. A recessive Mendelian characteristic implies that neither parent has the developed characteristic, but that the *Anlage* is potential. From this we see that consanguineous mating

¹ Read at a meeting of the Western Australian Branch of the British Medical Association on October 17, 1934.

is more likely to develop a latent characteristic, and from this we see also that it is not possible to exclude an hereditary *Anlage* because both parties are healthy.

Hereditary conditions must be sharply differentiated from similar conditions which have been acquired either ante-natally, at birth, or post-natally the result of disease or trauma. For example, it is difficult sometimes to distinguish congenital deafness from an acquired deafness due to meningitis.

I should like to say a few words about the German statute for prevention of hereditary disease. This is a compulsory eugenic measure. I read an article in a German periodical quoting the words of Hitler. His words were: "Those who are not physically and mentally healthy and worthy should not be allowed to perpetuate their disease in the body of their children. The State must therefore arrange that only those who are healthy should have children." I should like to repeat the first clause of the law, which has already been given by Professor Beasley in somewhat different English. It is: "He who suffers from hereditary disease can by surgery be made sterile if, according to the experience of medical science, it is highly probable [and those are the words I want you to note] that his progeny will suffer from severe physical or mental inherited damage." The other clauses have already been dealt with and the last part of the law discusses the setting up of hereditary health courts on the basis of whose decisions the law is applied. It should be noted that in this law sterilization only is dealt with, not castration. There is already legislation (and there has been for many years) to provide for the castration of criminal sexual perverts.

The crux of the matter is in the placing of all faith in the medical profession to forecast when it is "highly probable" that hereditary conditions will be transmitted. The fact is that such faith is at present unjustifiable. It is impossible at present in many cases to make this forecast. It is extremely difficult to distinguish truly hereditary conditions with an hereditary *Anlage* from congenitally acquired conditions. The problem of the "carrier" is left, namely those with a recessive or potential *Anlage*; and these are estimated as many times the number of those with developed characteristics.

Dr. Thompson mentioned some of the effects of the compulsory German law. It is compulsory for the doctor to notify his cases, and if the patients are not segregated they must go to the court. There is confusion in Germany with the old castration law, and the whole court procedure smacks so of punishment that already diagnosis tends to be falsified and patients are driven away from authoritative treatment.

Mental Deficiency.

As you know, mental deficiency is a term which includes a great variety of types, microcephalus, hydrocephalus, spastic conditions, epileptics,

mongols, cretins, and a great variety of others. Some are truly hereditary with an *Anlage* in the *Keim-plasma*. Other congenital cases are acquired as the result of birth trauma or ante-natal or post-natal toxic or inflammatory conditions. There is a great difference in the hereditary element in the mild and severe groups of mentally defective.

The mild groups, that is to say, the high-grade defectives, the dullards and the feeble-minded, are much more numerous—Grundy's figure is 85% of all cases. They are on a lower plane socially and morally, and in the cases in this group the heredity factor is demonstrated much more frequently, and Grundy gives the figure there of 75% of those high-grade cases.

In regard to the low grade defectives, imbeciles and idiots, these are less numerous, being noted at about 15% of defectives, and in these cases heredity is less frequently demonstrated, and the figure is 25% (Grundy). Treadgold, a great English authority, states that 80% of all types are due to inheritance.

Professor McNeil, of Edinburgh, has recently published an analysis of 1,000 cases under five years, reported by John Thompson, also of Edinburgh. McNeil comes to the conclusion, unlike the other people, that heredity plays a much smaller part than hitherto thought in mental deficiency. The majority of these 1,000 cases were congenital, but two-thirds of them he considered were due to non-hereditary morbid processes acting before, during or after birth, and that only one-third may have had an hereditary influence. In the majority of these, the parents were of normal mind, and the influence of heredity was obscure and uncertain. Only a small number were born of defective parents.

The Brock report gives figures from another angle, figures which have already been quoted tonight, that is, the examination of nearly 9,000 children, one or both of whose parents were defective. Those figures have already been given you, in that 60% of those children of defective parents either died or were deficient.

Mental defectives tend to mate together, and also they do not as a rule make good parents. We can say that the children of defectives will, with a "high degree of probability" be defective.

The Effects of Sterilization.

Sterilization does not improve the mental state; it does not lessen sexual activity. It will have very little effect (except perhaps over long periods of time) on the incidence of defectives. We must believe, I think, that it will, as time goes on, have an influence, because it will tend to eliminate the offspring of those cases with a dominant characteristic. True, it would leave the group of carriers with a recessive characteristic, but we may surmise that as time goes on the characteristic may become more and more recessive. Sterilization will have very little effect on the necessity for segregation, and will not materially lessen the segregation

accommodation necessary to look after those persons properly.

Sterilization should be regarded as an additional safeguard before discharge from an institution. There is the danger that sterilization may lead to general neglect of other safeguards. Increased promiscuity may occur. The erotic will still need institutional care to prevent social menace. Any compulsion (and this last point I raise with diffidence) would conflict with certain religious points of view.

THE MEDICAL EDUCATION OF THE PAPUAN NATIVES.¹

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In the ninth decade of the last century the British Government declared a protectorate over the south-eastern portion of the great island of Papua, otherwise called New Guinea. Later in the same decade this protectorate was declared a British possession and administered from London as "The Territory of British New Guinea". Shortly after the federation of Australia the supervision of the country was transferred to the Commonwealth of Australia and the name was changed to "The Territory of Papua", its present official designation.

The Territory of Papua is some ninety-two thousand square miles in extent. It has few or no roads. Transport is usually by boat or canoe, or on foot. There is a native population of some three hundred thousand scattered all over the Territory. It has its own administration, subject, of course, in the last resort, to the Commonwealth of Australia. It is administered separately from the Territory of New Guinea, the north-eastern part of the island formerly controlled by Germany.

If we were to supply one qualified medical man as doctor per thousand of the population, about the proportion existing in Australia, Great Britain or the United States of America, we should require about three hundred doctors. In Papua a doctor expects an income of about a thousand a year. Thus to equip Papua on accepted standards with doctors, an expenditure of about three hundred thousand pounds per year would be required. The total Government revenue of the Territory is less than half of this. The bulk of the native population support themselves by growing their own food on the land. The majority of those who do work for Europeans receive ten shillings a month in addition to board and lodging. Hence any attempt to equip Papua with doctors according to European standards is financially out of the question.

¹Read at a meeting of the Australian and New Zealand Association for the Advancement of Science, January, 1935.

I have lived and worked in Papua for over thirty years as a doctor and, during the earlier part of the time also as a resident magistrate. I have acted as Chief Medical Officer from pre-War days, and as such I have concerned myself with the improving of the native life from the medical and health point of view.

At one time I had hoped that as the country prospered we should be able to station a qualified medical man in each of the sixteen or so magisterial districts and to give him as assistants not only natives, but also a European assistant. However, instead of prospering, Papua has become less prosperous, owing not so much to the general world depression as to the fall in the price of copra and rubber, its two main exports.

As our resources have become less and less it has become obvious to me that we should have to content ourselves with native medical assistants working in the villages and supervised by three or four European medical assistants working under the control of the Chief Medical Officer. Such, in brief, is the present policy of the Papuan Government. In addition to the Government medical service, the various missions do a great deal of medical work and with the help of Government subsidies maintain two doctors and some nurses in the Territory of Papua.

At one time it might have seemed ludicrous to have suggested that the so-called savages of New Guinea could be trained to do useful medical work. At a still earlier date it might have seemed ludicrous that the natives of Japan, India or Fiji could ever be trained efficiently as medical men. Still this has been and is being done.

Even in the earlier days of Papua there was a doctor stationed at Port Moresby and at Samarai, mainly for the purpose of attending to the European population there.

As the native population became more settled and acquired greater confidence in Europeans, medical work amongst the natives began. Soon native hospital buildings were erected at Port Moresby and Samarai, and natives were employed and trained as wardsmen and assistants to look after native patients.

Coconut and rubber plantations developed extensively between 1908 and 1912. Concurrently with their development bacillary dysentery became prevalent on the plantations and in the villages. As a result, in 1912 I was appointed a medical officer with duty to travel about the Territory mainly for the purpose of dealing with the epidemics of dysentery, which were then almost universal. With me I had three natives, whom I found of great use in handling the epidemics and in looking after patients. By this time I had learned to speak the native Motuan language, a language very widely understood in Papua and, needless to say, I found a knowledge of this language exceedingly useful in dealing with the village natives.

During the War period I acted as Chief Medical Officer in Port Moresby; but as opportunity occurred, the work in the villages—the travelling medical work as it is usually called in Papua—was continued by one or two medical men, who mostly gave up the work before very long, and by a European medical assistant. These gradually began to train the native assistants to do more and more village work.

Soon after the War terminated, the use of arsenicals for the treatment of a tropical disease called yaws came into general use. Yaws is a very chronic disease, and the infection with yaws was very general in the coastal districts. At first, Europeans gave the injections, but afterwards no difficulty was found in training natives to give the arsenical ("914") by intravenous injections. The first native who did so, trained by a travelling medical officer, could neither read nor write, and merely recorded each injection by making a stroke on paper. One difficulty, however, in using the arsenicals was their high cost. About 1923 the use of bismuth, given by intramuscular injection, came into use. The material used in giving an injection of bismuth costs merely a fraction of a penny, whilst at that time at least the arsenicals cost several shillings per injection.

Following on this a definite policy was instituted of training natives to do independent medical work in the villages. Doubtless the main work they did was the giving of injections for yaws; but they did their best with any cases which came along. They were also very useful in the treating and in the handing out of skin treatment for the tropical disease *Tinea imbricata*, and in giving simple medical and surgical treatment.

Many thousands of injections per year have been given for yaws, and in the native villages there has been a very great decrease in the incidence of ulcers and other conditions dependent on yaws. Apart from the important matter of expense, I prefer bismuth for this use rather than the arsenicals, since I regard it as safer.

As regards efficiency, case records show that bismuth compares quite favourably with the arsenicals. At first there was much prejudice against it, due to its cheapness. But one European medical assistant who began by being prejudiced against its use, made systematic records of the after-effects of one injection. Roughly speaking, he found that one injection effected a clinical cure in some 92% of cases, while one bismuth injection effected a similar cure in about 90% of cases of supposed yaws.

After several modifications of the original bismuth tartrate injection we have in Papua adopted the use of bismuth salicylate in olive oil. The obvious improvement which follows the injection of bismuth in cases of yaws has made natives only too willing to put up with the small amount of pain involved in the injection. In fact, the "needle", as the Papuans call it, almost takes the place in

Papua of the "bottle of medicine" which every hospital patient in London used to expect thirty or forty years ago.

Concurrently with the training of the travelling native medical assistants has gone the training of them in the matter of their making reports in English. Now the senior ones send in reports showing the more serious cases treated by name, village, district, date, sex and age status, with a statement of the diagnosis and treatment in brief. Yaws or injection cases are always reported as above. Less important work, such as the giving out of skin treatment, Epsom salts or of quinine, is merely recorded by the total numbers to whom such treatments are given.

The above fairly represents the conditions which existed in Papua till about 1932-1933, when a more ambitious attempt was initiated with regard to the medical education of Papuans.

In the latter part of 1932 it was becoming felt that whilst valuable work was being done by the native medical assistants at comparatively small expense, yet further improvement would be small unless they received some education in the sciences on which medicine and surgery are based, that is, in elementary physics, chemistry, general biology, physiology and anatomy. The first suggestion was to send two or three natives to the Medical School at Fiji. This school makes a special effort to train the natives of the Pacific in medicine and surgery. It so happened that towards the end of 1932 I came down to Sydney on leave of absence. The question of the training of native medical assistants in Papua became a subject of conversation with the Honourable C. W. C. Marr, then Minister for both Health and the Territories, and now Sir Charles Marr, with Dr. J. H. L. Cumpston, the Commonwealth Director-General of Health, and with Professor Harvey Sutton, the Director of the School of Public Health and Tropical Medicine at Sydney. It became apparent that if the Papuan Government was willing, the Commonwealth authorities and the School of Tropical Medicine at Sydney were more than willing to cooperate in the matter of giving Papuan medical students some training in the subjects of the first and second M.B. examination. The Papuan Government concurred with this being done.

On my return to Papua it was arranged that the School of Tropical Medicine would accept a dozen or so Papuans early in October, 1933, and would give them a course of instruction extending over about half the year. I then selected a dozen natives for such training. All selected had to be able to read and write well in a native language at least, and had to have a knowledge of simple arithmetic and some knowledge of English. Some were already native medical assistants working in the medical department, and as such had some practical knowledge of dealing with the native patients, whilst others who promised well were new recruits for the work.

With a view to fitting them for a course at Sydney, I gave them a preliminary course of training in Port Moresby. In this course they all kept uniform notes on the instruction given in the native Motuan language and in English. The method I used was first to write the notes myself in Motuan, then to get one or two natives to go over the notes with me and to correct mistakes in the language. When I felt assured that they understood the notes, I then translated them into English and all the students made copies in both Motuan and English. Each paragraph was written first in Motuan, a language with which all were familiar, and then in English. This course served as an introduction to the subject, taught them the use of simple technical terms, and served to give them a better knowledge of the English language.

They were first taught the names and positions of the bones and organs of the body and some anatomical terms. They were next taught weights and measures and how to weigh. The physiology of the blood, the action of the lungs in the matter of aerating the blood, and something about digestion and the action of the nervous system were explained. The students were also taught the meaning of such terms as solids, liquids, gases, soluble and insoluble, chemical elements, compounds and mixtures, viscous and mobile, and suspensions and emulsions. More particularly the existence of the air was stressed, and the way in which one component of it, oxygen, was transported around the body by the blood. Some rather more advanced anatomy and physiology followed. The use of the microscope was also shown them.

Early in October, 1933, I accompanied the first batch of students to Sydney. They there received a half year's course of instruction at the School of Tropical Medicine. Dr. Clements, of the school, was appointed their tutor. He revised and extended the work they had done in Papua, and more especially with the resources of the school at his command, was able to explain and illustrate the work they did by means of practical demonstrations and the use of models in a way we could not in Papua. Whilst there is much as regards the practical treatment of tropical diseases common in Papua which can best be taught there, where cases of the disease are available, yet a very useful part of the teaching given at Sydney was the treatment of surgical injuries, such as fractures and dislocation of bones, serious hæmorrhage, and head injuries *et cetera*. I have mentioned this part of the work to more than one medical man who has remarked: "Yes, I suppose a sort of Saint John's Ambulance class." However, I would note that the Saint John's Ambulance work aims—I will not say merely aims—at teaching how to give first aid treatment and presupposes that in the course of a few hours, or at most a day or two, a serious case will be placed in the hands of a doctor with hospital resources at his disposal. It is different in Papua. Such teaching was continued from the first aid

stage to the subsequent and after-treatment of the patient in a native village with no ordinary surgical resources, or at best on a Government station with little, if any, of such resources. Very useful indeed in this respect were the demonstrations which the New South Wales Railway Ambulance Corps gave the students at Glenbrook in the matter of making bush splints and bush stretchers.

One cannot practise in the tropics at least without its being evident that the modern views on vitamins and the resultant vitamin diseases are of considerable importance in practice. This was impressed on the students at Sydney by making them keep at the School of Tropical Medicine animals fed on normal and on vitamin-deficient diets. The effect of deficiencies in vitamin A, vitamin B and vitamin C were easily demonstrated.

On return to Papua in March, 1934, the students were distributed all over the Territory. They work in the various magisterial divisions with some supervision and assistance by the resident magistrate. But such supervision is not expected to extend to purely professional matters. They also receive some supervision by European medical assistants working under the direct control of the Chief Medical Officer. The students have given every satisfaction.

It was felt that the training of this first group of students at Sydney had been so successful that shortly after my return from Papua it was decided to prepare a second group. No difficulty was experienced in collecting suitable candidates. This time a somewhat larger number was sent.

It was found that although some natives from all over Papua could speak a certain amount of Motuan, yet natives outside the Central Division had not a sufficient knowledge of it to understand the instruction given to them in Motuan. However, I am expecting that it will be possible to overcome this difficulty another year if, as I hope, further groups are sent to Sydney.

I regard a party of three as the ideal number of natives who should as a rule travel together. The leading native, apart from general proficiency, should be well trained in the matter of giving injections for yaws; the second native should be capable of making records in the patrol book which is carried round by all parties. He should be capable of assisting and, if necessary, of doing the work of the first native. The third native in the past has usually been one with little education, whose main business has been to look after the baggage when travelling and to assist the first two natives as far as he is able when called upon. In the future I am expecting that the third native will be one who has had a Sydney training and who will concern himself also with learning the practical side of village work.

I have often been asked why one native cannot do all the work. To this I would reply that every travelling medical officer or European medical assistant, when told to travel, has always at once applied for at least three native assistants. I did

myself when I had to travel as a doctor. These native medical assistants are expected to do similar work to that of a European assistant, so one cannot expect them to do the same without similar assistance. A few years ago it would have been quite impossible to get natives to travel about in districts they did not know well. In fact, at first it was very difficult indeed to get natives to travel about without a European with them, owing to lack of confidence. The first native who headed a patrol party did so only after I had listened to long talks from him as to how neither he nor his fathers had ever done such things.

Doubtless in special circumstances, such as in the case of a native who knows a district well and who has had enough experience of the work, it may be possible to send him out with one or even no assistant.

The training of the second group at Sydney is now being carried out on very similar lines to that of the first group.

Perhaps, in concluding this part of my paper, I should say that I am fully convinced that for the best work to be done amongst natives the first thing to do is to acquire the confidence of the native. You may take a horse to the water, but you cannot make him drink. For many years now I have taken up the attitude, when talking to natives, that the Government pays me to look after their health and I am quite willing to help them all I can, but if they will not come up for treatment it is their own concern, and as far as I am concerned it merely saves me trouble. Such an attitude results in more patients coming than if I went out of my way to compel them to come for treatment.

Many years ago, when I was just beginning medical work in the villages, a magistrate notified a village that I was visiting it. On my arrival the native village policeman came up to me. I inquired if the people were in the village. He said they were. I duly inspected them and found no sick. On inquiring as to whether there were no sick in the village, the village policeman said that the sick had heard I was coming, so they had all left the village. In another case I know of an injured native who was persuaded, or rather over-persuaded, to submit to treatment by a missionary. The result was that at the conclusion of the case the native asked for payment for having let the missionary treat him. I have at times advised natives to go to a native hospital merely for out-patient treatment. They have on more than one occasion told me that they would go only they feared that they would be compelled to stay in the hospital. If a European wishes to give advice to a native, he has to be very careful that the native does not regard it as an order which he must obey or perhaps go to gaol. The use of natives as medical assistants will, I think, remove much of this fear of compulsion.

So far in this lecture I have concerned myself with speaking to you from the medical point of view. But the work I have described must be of

interest to those who are concerned with natives from the anthropological point of view or from the educational point of view.

Some have expressed to me surprise that natives of Papua have sufficient intelligence to understand anything about such things as physics, chemistry or physiology. I have worked with Papuans for over thirty years in various capacities and find it very difficult to assert that they are less intelligent than, say, Japanese, or less intelligent on the whole than Europeans—they may be very ignorant, but ignorance is not the same thing as lack of intelligence. It may be that if we took two hundred unselected Europeans and also two hundred unselected Papuans and accepted the average European standard as a degree of intelligence such that one hundred of the Europeans exceeded it and one hundred of them were below it, we might perhaps find only fifty of the Papuans who reached this average European standard. I do not for a moment think that we should find that less than fifty would reach this standard. I am quite aware of the difficulty there is in estimating intelligence and the difficulty of excluding apparent lack of intelligence merely due to ignorance and lack of education.

In dealing with the question of intelligence another difficulty arises. Few Europeans take the trouble to learn a native language; and very few, if any, natives can in any sense carry on a critical argument in English. Unfortunately so many Europeans, if they find that a native cannot understand them and that they cannot understand a native, assume as a matter of course that the native is not only ignorant, but that he is also unintelligent and incapable of being taught.

A great deal of the difficulty is the lack of a common language known to both the European and native and in which both are in the habit of using for conversational purposes. Doubtlessly most of my audience have spent many hours in learning one foreign modern language and probably one dead language. But I strongly suspect that few of you who have lived only in Australia or other purely English-speaking country would care to have to learn a new subject by listening to lectures given in that subject in any language apart from English. The Papuan finds a similar difficulty. If a European schoolboy of sixteen or even nineteen were suddenly called upon to learn medicine solely by means of French or Latin lectures and text books, I very much doubt if, in the same time, he would progress faster than the Papuan students have done. In short, it is very difficult, even with the most elaborate tests, to say where ignorance ends and lack of intelligence begins. Lack of a common language must accentuate this difficulty. I would myself have found it impossible to prepare Papuans for a course at Sydney had I not for many years have used Motuan in conversing with native Papuans.

With regard to the question of Papuan intelligence, I should like to mention that one of our

European medical assistants, Mr. J. N. Walsh, has been in charge of and residing with the Papuans in Sydney. He is an enthusiastic scoutmaster and also has been a signal instructor in the Australian Army. He has been teaching the Papuan students to signal both by semaphore method and by the Morse code method with flags. He tells me that he has found that the Papuans pick up both methods quite as quickly as Europeans.

Whilst I have been primarily concerned with the education of the Papuans from a medical point of view, yet I would claim that they have received incidentally a very good educational course, using the term education in the best possible, if also the least tangible, sense of the word.

It must be all to the good surely that even a native should be able to understand something of physics and chemistry as well as something of his own body and how to keep it in health. In another direction education is of importance. The Papuan is barely leaving the stage when he believes that all deaths are caused by witchcraft. Hence when a death occurred their old custom was to seek for the sorcerer who had killed the sick man, with all the possibilities of a blood feud arising as a result. Even in one case I know of, when a shark took a native, it was contended that the bush people had arranged it all. I said that probably the shark was merely hungry and happened to come across the particular individual. I was met by the counter-argument that the shark must have passed two other natives before he came across the one he killed, and that the bush people had arranged it all because they were jealous of the native, who was a particularly capable native, as indeed he was. Those of you who may have read an account of the trial of the Lancashire witches which took place in England early in the seventeenth century, will realize that at that time people in England, even those in authority, still believed in witchcraft and were prepared to inflict the death penalty on witches. Such ideas were very similar to ideas which are still very prevalent in Papua. I venture to think that it is only education and increasing knowledge which has eradicated such ideas from western Europe, and I venture to hope that education and increasing knowledge will do much to eradicate such ideas from Papuans.

It is pleasant to record that although a Papuan may often be very scared in the matter of being compelled to undergo treatment, yet I have never known one suggest that treatment has led to a fatal result. Although one well known method of killing in the old days was for the sorcerer to get hold of some excreta of the victim, mix it with magical herbs and to roast it over a fire, yet no difficulty is usually experienced in the matter of getting specimens for hookworm examination. In the earlier days a native with a high temperature due to malaria was in the habit of bathing in the sea or in a creek. In the case of malaria this does not seem to do harm, and in fact may be of benefit. It was

very different, however, when he had influenza or pneumonia. At the present time there is little, if any, difficulty in this matter, at least around Port Moresby. We have had measles in the country without infections in natives being any more severe than concurrent European infections. It is well known that there was a classical example of a very severe epidemic of measles in Fiji in the early days of that country. It is possible that the enormous mortality in the Fijian epidemic was due partly to a similar custom of bathing in the sea or in creeks when the patient was ill.

At the present day the Papuans still pursue the primitive and very wasteful custom of making their gardens on land which has lain fallow for some years. When one or, at the most, two crops have been taken off the ground, the garden reverts to its former condition of being a wilderness. Some day I hope it will be possible to teach them less wasteful methods of growing their food supply and that they will learn something about modern ideas of agriculture. This will be all the easier to do if they begin by having some knowledge of chemistry, physics and physiology.

Students brought down to Sydney have varied in age from little more than fourteen years to nearly thirty. As a general rule I think an age of from some seventeen years to twenty years of age is about the best. Those older than the earliest twenties seem in great measure to have lost their elasticity of mind and to find it harder to grasp new ideas than those about twenty years of age. I suppose it is much the same in the case of Europeans.

In conclusion I should like to say that I have actual copies of the note books kept by the students at Port Moresby and in Sydney, as well as a patrol medical report as sent in by natives. If anyone is specially interested in the matter I shall be only too pleased to show them to him.

HOMOGENEOUS X RADIATION IN BIOLOGICAL EXPERIMENTS.

By WM. H. LOVE, B.Sc., Ph.D.,
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AN article by Dr. C. E. Eddy, under the above title, appeared in THE MEDICAL JOURNAL OF AUSTRALIA on Saturday, February 2, 1935. In so far as it was pointed out that Moppett, Scott and Duthie probably failed to consider the possible bearing of certain factors on the interpretation of their experimental results, I signify my agreement, but the publication of the article in a medical journal raises the necessity for a further statement, partly because, to those unacquainted with the physical sciences, it may seem to constitute the quintessence of the problem, and partly because, as Eddy tells us, "biological and medical readers are likely to accept without question, claims made as to

the homogeneity of X ray beams used in biological experiments" and are likely, therefore, to accept without question certain inaccurate statements made in this regard in his article, which, incidentally, contains nothing previously unpublished or new to those in possession of a working knowledge of elementary physics.

It is indeed surprising to find that this article, written by an X ray spectroscopist, and intended to be critical, does contain a number of inaccuracies, one grossly incorrect statement, and a solution to an undefined mathematical problem.

In that section of the article dealing with the spectrometric method of isolating a beam of approximately monochromatic radiation, Eddy points out that "the width of the wave-length range selected depends upon the width of the slits defining the incident beam of X rays and of that permitting the passage of the selected radiation, as well as upon the dimensions of the spectrometer system and the position of the target of the X ray tube".

This cannot be accepted as a precise statement of fact. The factors referred to by Eddy must be considered in relation to the finite size of the focal spot in the X ray tube. In addition to this, it is not at all clear what he means by "the width of the wave-length range selected", because, under the conditions of experiment, it is found that "the wave-length range" falling on a tissue, exposed as described, may vary from point to point over the irradiated tissue area, and in fact it is a function of the factors mentioned by Eddy, and of the size of the focal spot. No doubt Eddy has in mind a system that gives the equivalent of a point source of X rays, which is merely a particular case of the more general and inclusive statement that I have outlined.

Eddy then goes on to say: "for the selection of approximately monochromatic radiation, narrow slits of the order of one- or two-tenths of a millimetre must be used". In this statement no reference is made to the disposition of the slits and the crystal surface in relation to the focal spot of the X ray tube, and consequently the degrees of homogeneity associated with the beams isolated in this way are not adequately defined. Eddy either overlooked this or he took the view that those physicists reading his article would be sufficiently well acquainted with what is usual in the practice of X ray spectroscopy to understand that "for practical purposes the specification was adequate".

The influence of the many factors to which reference has been made, together with a consideration of the possible presence of higher order spectra scattering phenomena *et cetera*, has already been studied practically and analytically by a number of people.

Eddy's references to portions of my work centre around the fact that I have described a certain

beam or beams of X radiation as being "approximately homogeneous" or "approximately monochromatic". He implies that the radiation employed in these particular experiments could not reasonably be described in these terms. What, I would ask, is the definition of an "approximately homogeneous" beam of X rays? A definition, so far as I know, does not exist, and it is therefore manifestly absurd to infer that the beam of radiation used in the experiments referred to was not fairly described by the use of the phrase "approximately homogeneous".

Referring now to the method of producing approximately homogeneous X radiation by the method of selective filtration, the preliminary comments which I wish to make arise out of the following paragraph: "The methods of obtaining homogeneous radiation by the use of selective filters is described and it is shown that the method is successful only when sufficient filter thicknesses are employed. In some cases an insufficient filter thickness has been employed." Eddy's use of the phrase "it is shown" may give the impression that the significance of filter thickness has just been discovered, and therefore probably unappreciated by all workers using this method to date. Actually this method of isolating an "approximately homogeneous" beam of X radiation has been known and used, particularly by crystallographers and radiobiologists, for many years; likewise have the limitations and possibilities of the technique been appreciated. When Eddy, in the above paragraph, goes on to say that in certain work, to which he refers in his article, an insufficient filter thickness has been used, one would ask: insufficient for what? Surely not for the production of "approximately monochromatic" radiation!

I note with concern that in the same paragraph Eddy refers to "homogeneous" radiation, when I would venture to suggest that what is really meant is an "approximately homogeneous" beam. If an attempt was made to produce a physically homogeneous radiation by the filtration method, I fear that we would require a filter of infinite thickness, and in this way our efforts would be rewarded by the possible production of a monochromatic ray with zero intensity.

Eddy refers in detail to some of my work in which was used a tube, with tungsten target, operated at 90 kilovolts, the radiation from which was filtered by 0.1 millimetre of tungsten and 3.0 millimetres of aluminium. According to Eddy, I "claimed" to have produced in this way a beam of approximately homogeneous radiation. In the first place I "claimed" nothing. The scientific outlook and the making of claims are incompatible; rather was the beam of radiation described as being "approximately homogeneous", and, despite Eddy's views and inaccurate calculations, the radiation was fairly described in that way. Kaye, referring to the effect of filtration on homogeneity, states that a filter of tungsten 0.15 millimetre in thickness

(unaccompanied by any non-selective filter) removes most of the general radiation and leaves the α and β components of the K radiation of tungsten when the tube is operated at 100 kilovolts. If we are prepared to assume for the moment that the curves shown in Figure III of Eddy's article are valid, it is possible to obtain a general idea of the similarity between the characteristics of this beam and those of the beam to which I have applied the descriptive phrase "approximately homogeneous". It is in this sense that the phrase in question is used by myself and is used by others; it is hardly necessary to add that of two such approximately homogeneous beams the degree of homogeneity of the one may be greater than that of the other.

Actually, from the point of view of the significance of these experiments and the results, the homogeneity of the beam, approximate or otherwise, does not enter into the story. Eddy appears to appreciate this at one stage of his article and very generously and wisely states that undue significance should not be attached to my use of the term "approximately homogeneous" in describing the radiation isolated by filtration. These are words of wisdom, and in fact it is just in this sense that the term is used by myself and other biophysicists.

It is fair in passing to mention that, in the same way and for the reasons already set out, it would be equally undesirable to attach any undue significance to Eddy's particular use of the word "approximate". I have mentioned that the homogeneity or otherwise of the radiation in this experiment was devoid of significance. The conditions of operation of the tube and the filtration *et cetera* served merely to define the quality of the radiation in a general way, but since Eddy has gone into the matter in some detail, I will follow him through a little further.

In his Figure III are given curves which are stated to show the energy distribution in the beam which I considered to be approximately homogeneous. The determination of these curves depends upon a knowledge of the energy distribution in the unfiltered beam, as actually used in my experiments; and Mr. Turner, I notice, undertook the responsibility of calculating this distribution and represented his results in the form of a curve, incorporated in Figure III.

How this curve was obtained I know not, and the situation becomes more puzzling after reading Eddy's own paper on the influence of wave form on the quality of X radiation. In the absence of information relating to the wave form of the generator used in my experiment, such a calculation cannot be made, but by some undescribed mathematical technique a result has apparently been obtained, and it is on this result that the nature of the filtered ray has been determined. In other words, the basis of the calculation is unsound. No doubt it is an approximation, but unaccompanied, as it is, by any covering statement, it constitutes

a glaring inconsistency in one who objects so vigorously to my use of the word "approximate", even to describe a superficial condition of experiment which had no essential bearing on the significance ascribed to the experimental results.

Even if we assumed that the curve in question was the correct one, there is one point that calls for attention, and that is the impression that can be conveyed to the uninitiated by the trick of altering the scale in a graphical representation of any phenomenon. The fact is that if the units of wave-length on the wave-length axis were made larger, then the heterogeneity of the filtered beam would appear to be much greater, and if the wave-length units were made smaller, the homogeneity of the filtered beam would appear to be much greater than that indicated by Eddy's curves. Comparing the graphs shown in the above article and those of a similar nature published by Eddy in the report of the Third Australian Cancer Conference, I notice a distinct increase in the wave-length scale.

Eddy's distribution curves call for further comment in so far as the failure to incorporate appropriately the K emission lines, with their associated energy, may be misleading. In order to obtain a quantitative estimate of the degree of homogeneity of a beam of X rays it is of some importance to know the true energy wave-length distribution curve, and if, as in the present case, a characteristic radiation is included in the wave-length range, it must be appropriately considered and incorporated in the distribution curve. For the purpose with which we are here concerned; is not sufficient merely to indicate the position occupied by these lines and to restrict attention to a quantitative consideration of the background radiation. The curves, in their present form, do not, therefore, fairly illustrate the quantitative energy concentration associated with filtration, and consequently their significance is rather more restricted than is indicated by Eddy's article.

I believe that I have now made the point quite clear. Everything depends on what we mean by an approximately homogeneous beam, and until this matter is settled it is absurd to criticize on the basis that the beam is not approximately homogeneous. The fact is that quite a lot of the white radiation has been effectively repressed and the beam is much more homogeneous than the primary unfiltered beam.

Referring now to the experiments in which was used a filter of hafnium oxide, obtained by rubbing the oxide into a sheet of paper, Eddy complains that no information is given regarding the thickness of the hafnium used, and then indulges in an unfruitful speculation as to the possible thickness of the paper and the oxide employed by me in these experiments. I was concerned neither with the measurement of the actual thickness of the hafnium nor with that of the paper, and this is the obvious reason why no reference was made to these thicknesses. From the viewpoint of the significance of the experiments

performed with this particular beam of radiation, measurements relating to these thicknesses were unnecessary and were not made. This was not a problem in X ray spectroscopy; rather was it one concerned with the much more vital problem of cancer. Eddy, however, appears to take up the equivalent of the view that a mathematician, shall we say, should in all his published works describe the elementary process of counting. Apart from the generally accepted considerations relating to inexpediency and associated features, there are no particular reasons for omitting to do this.

The oxide was rubbed into the surface of a sheet of paper and the paper was repeatedly folded until I obtained the desired result, namely, a copious emission of $K\alpha$ radiation on a weak background of white radiation; the analysis of the radiation was made with a Bernal X ray spectrometer used in conjunction with a microphotometer.

Why trouble to measure the actual thickness of the paper and that of the oxide, and what bearing has this measurement on the problem with which I was concerned? Eddy, in all seriousness, suggests the unwarranted devotion of time to the measurements of oxide films while the problem of cancer remains unsolved; he asks one to play the fiddle and to watch Rome burn at the same time.

The significance of Eddy's speculations in this regard and of his distribution curves (even if they were correct) is hardly that which he appears to attribute to them.

Finally, I would draw attention to a grossly incorrect statement that occurs at the beginning of the article. Referring to the discussion on the work of Moppett at the Fifth Australian Cancer Conference at Canberra, Eddy attributes to me the statement that "the failure of Scott to obtain a selective action with wave-lengths was due to the use of an X ray beam of unsatisfactory homogeneity". What I did say was that the only essential difference that I could see between the techniques employed by Scott and by Moppett was the way in which they produced what they described as homogeneous radiation—a very different statement to the one attributed to me. So far as the problem relating to selective biological effects with wave-length is concerned, I have never been able to see any basis, either physical or biological, which could support the possibility of such a phenomenon. Opinions, however, count for little. In scientific work we are concerned with facts.

Reviews.

A TEXT BOOK OF MEDICINE.

It seems likely that the old style of comprehensive text book of medicine written by one author will soon be

quite extinct. The field is now so wide that no less than twenty-six contributors are responsible for the second edition of Musser's "Internal Medicine".¹ To manage so large a team must be rather like the task of a prime minister with his cabinet, but the editor of this now well known book has contrived to produce a balanced and modern presentation of medicine, including psychiatry. A good test for a single volume work of this kind is to read over a number of representative sections to see if the correct impression of the subject can be readily gained by a quick perusal, and to this test the book stands up well. Further study reveals that the information is up to date and that there is a sufficiency of essential detail.

It is always interesting to observe how far the various authors of a composite text book follow tradition and how far they are prepared to discard what appears to them to be outworn. In general the changing viewpoint of some branches of medicine is ably championed in this book. For example, though clear and full accounts of the physical findings are given in regard to diseases of the lungs, it is plainly stated that radiological examination occupies the place of greatest importance. Again, the broader views of peptic ulcer (so far as we do understand this difficult subject) are presented most refreshingly, to such an extent, indeed, that it is easy to imagine that some surgeons might find the section on treatment most annoying. Perhaps it is open to question how far a text book for general use should be provocative, but it is better to interest the reader by making him think than tamely to acquiesce in conventional views if these are open to question. Those who confidently diagnose gall-bladder dyspepsia simply by its type should turn to the very brief account of chronic cholecystitis. But it must not be thought that the book is in any sense revolutionary, for the authors contrive to retain all that is best in the accepted and traditional teachings. Small sections on history are inserted at appropriate places, always an excellent feature, which tends sometimes to give us a proper humility as we read of what we imagine are modern advances. Bibliographies are supplied also at intervals, drawn chiefly from American and German literature; these are brief, recent and useful (in passing it is interesting to see the work of Kellaway on snake venoms recognized). The scheme of classification adopted is logical, and though diphtheria and tuberculosis are not inserted among the infections, they are included among the diseases of childhood and of the chest respectively, where they are well placed. The infections are very well dealt with altogether, and the way in which the digestive diseases are discussed may also be singled out for praise. Pathological descriptions are adequate throughout the book, though in some cases, as in the section on pulmonary tuberculosis, the classification becomes too artificial to be readily applicable to the patient at the bedside. The chapter on nervous diseases is hardly up to the high standard that we are accustomed to find in the British text books, but contains all essential information succinctly presented. One or two expressions met with in the book do not fall gratefully on the ear, for example, "neurotic" progressive muscular atrophy, and "clinico-roentgenologic course", but in general the style, varying as of course it must with the different writers, is accurate and pleasant.

It is impossible to traverse so comprehensive a volume in a brief review, but it may be said finally that it shows American medicine to be broad in outlook and progressive in spirit, and is a welcome addition to the rather small list of reliable yet moderate sized books that cover the whole range of medicine. The volume is well produced and comfortable to read, the misprints are very few, and the index is adequate.

¹ "Internal Medicine: Its Theory and Practice in Contributions by American Authors", edited by J. H. Musser, B.S., M.D., F.A.C.P.; Second Edition; 1934. Philadelphia: Lea and Febiger. Royal 8vo., pp. 1307, with illustrations.

The Medical Journal of Australia

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MEDICAL CERTIFICATES AND THE NEED FOR CAUTION.

PRIOR to graduation medical students are generally taught something about their responsibilities regarding medical certificates. They are warned against carelessness and its possible effects. Like many lessons that the undergraduate has dinned into him, however, those concerning certificates are too often forgotten. Moreover, medical practitioners, in spite of repeated reminders, often appear to look on the matter as one of not very great importance. Were departmental heads, officers of insurance companies and of other bodies so disposed, they could produce evidence that would show how necessary it is to draw attention from time to time to the need for care in the writing of certificates concerning disabilities of men and women. The General Medical Council of Great Britain takes such a serious view of this matter that it has issued a warning notice to the effect that any registered practitioner who shall be shown to have signed or to have given under his name and authority any certificate, notification, report or document which is untrue, misleading or

improper, is liable to have his name erased from the medical register.

It is obvious that medical certificates may be concerned with almost any aspect of medical practice. In some of his work a medical practitioner is not required to make an exact diagnosis nor to express his views regarding the prognosis of a patient's condition—the treatment may be symptomatic or empirical, and neither the patient nor his relatives may ask that a name be given to the illness. In medical certificates diagnoses have to be stated and, more often than not, a prognosis has to be given. The certificate thus becomes an expression of the medical practitioner's opinion—it is essentially different from certain types of legal certificate that are certificates of fact. Many persons seeking compensation for an injury or sick pay during the course of an illness try to mislead the medical attendant. The attendant has to be a student of human psychology at all times, and when he is giving a medical certificate more perhaps than at any other. He cannot always unmask a malingerer, and with the best intentions in the world he may occasionally give an incorrect certificate. Another point is that a medical practitioner should always be impartial in his certification. If he is acting for an insurance company, he must not allow himself to be influenced by the next balance sheet of the company employing him. Again, if his patient is seeking payment from a company with which he (the medical practitioner) has previously had some unpleasant argument, he must not let this fact colour his views. The same diligence should be used in attaining impartiality as in the discovery of malingering.

Having stated some general facts about certification and having shown that a certificate is a reflex both of a practitioner's knowledge and of his integrity, we would draw attention to two reprehensible practices. These are probably adopted either from sheer good nature or from laziness; they are on this account none the less reprehensible. Certificates are sometimes post-dated, generally to save the patient trouble. To write a certificate on January 1, dating it January 5, and stating that the patient "is now able to resume work" is wrong. The

certificate should be dated January 1, and the statement should be that the patient "will be able to resume work on January 5". The practitioner who gives a post-dated certificate lays himself open to a charge of being wilfully misleading—he certainly implies that he has seen the patient on the day shown on the certificate. The second matter has to do with the issuing of a certificate without seeing the patient. A medical practitioner may be informed, on what seems to him a most reliable authority, that a patient has, for example, fractured his femur. He should in no circumstances give a certificate stating that "Mr. X. is suffering from a fractured femur". A medical practitioner can always protect himself by prefacing his statement with the words: "I am informed that . . ."; the person to whom the certificate is sent—employer, insurance company or friendly society officer—will then have to judge whether the source of information was reliable. The only safe, the only honest, course to adopt is never to give a certificate as to fact or opinion without seeing the patient. Not infrequently a post-dated certificate or one which has been given on hearsay information brings discredit on a medical practitioner, and indirectly on the whole profession. These things do happen and medical practitioners will do well to take heed.

Current Comment.

ACUTE PANCREATIC NECROSIS.

ACUTE pancreatitis has been recorded as a result of extension from adjacent organs and also in the course of infective disorders, such as septicæmia, pyæmia and typhoid fever. In typhoid fever the pancreatic gland cells may exhibit cloudy swelling and the connective tissue may be infiltrated with leucocytes. In severe cases the condition may be hæmorrhagic, blood extravasations filling the gland and often extending to the adjoining tissues. Abscesses or diffuse suppuration may occur, or areas of gangrene or necrosis leading to peritonitis. Acute pancreatic necrosis is a disorder of the first magnitude, with a high mortality rate. The signs and symptoms include sudden acute pain and tenderness with muscular rigidity. The intense pain may be referred to the epigastrium, left or right hypochondrium or back, and may not be relieved by morphine, being of greater intensity than that of other abdominal catastrophes. Nausea and vomiting

are common and there may be laxity of the bowels or constipation. 'Profound shock or collapse is usual and the manifestations may resemble perforative peritonitis or intestinal obstruction, particularly when associated with abdominal distension. Sometimes the onset may be less violent. Cyanosis is a usual accompaniment, particularly noticeable about the lips and finger nails. Jaundice occurs in about one-third of the cases. Urticaria is seen rarely. A palpable swelling sometimes occurs—due to the presence of fluid in the lesser peritoneal sac. This has been mistaken for a perinephritic abscess. The temperature may be normal or subnormal, with a pulse frequency out of all proportion to the temperature. German writers stress the value of an increased diastase content of the blood and urine in diagnosis. The absence of trypsin from the duodenum is also of diagnostic significance. Loewi's conjunctival adrenaline test generally gives a positive result, indicating pancreatic disease.

The aetiological factors of acute pancreatic necrosis are not understood. Over thirty years ago E. L. Opie considered that this condition was due to regurgitation of bile up the pancreatic duct, activating the pancreatic ferments and causing autodigestion of the gland. In a fatal case he found a small stone so lodged in Vater's ampulla as to convert the common bile and pancreatic ducts into one continuous channel. E. Eggers (1924) found no evidence of infection in the early stages, but secondary *Bacillus coli* invasion appeared later. He described six cases of sudden pancreatic necrosis—the so-called pancreatic apoplexy—due to vascular or chemical injury. All his patients had had previous attacks suggestive of gall-bladder disease, and five had biliary calculi. Eggers could not definitely state whether bile entered the pancreatic duct or whether a gall-stone or sphincteric spasm caused temporary obstruction with increased pressure in and rupture of the duct. In one instance a strip of necrotic tissue adjoined the main duct throughout its length. Eggers rejected a lymphatic origin. M. Kaufmann also does not accept the theory of infection through the lymphatics. In animals he could not induce pancreatitis by infecting adjacent lymph glands. D. Chamberlain, however, favours such a possibility. He considers that the valve guarding the opening of the pancreatic duct prevents influx of bile or intestinal contents and that in acute pancreatitis the bile duct does not seem inflamed, although the bile may contain streptococci. Many observers, however, attribute acute pancreatitis to invasion of the pancreatic duct by septic bile. E. Archibald recorded that if bile were injected into the pancreatic ducts of cats temporary massive œdema supervened, and he noticed the same condition during operations on human subjects. G. von Bergmann stated that in animals we can reproduce the exact picture of acute pancreatitis as seen in man. He considered the condition to be caused by the liberation of trypsin, which digests the tissues, including the pancreas,

and that if mild attacks were recognized and treated by trypsin to secure immunity, hæmorrhage and necrosis might be averted.

J. R. Parry and K. Murray have discussed twenty cases of acute pancreatic necrosis (eight fatal) seen in five years.¹ They state that there are five possible routes for invasion of the pancreas. These are the blood and lymph streams, extension from a gastric or duodenal ulcer, regurgitation up the pancreatic duct from the duodenum, and by the bile passages. Blood infection is possible, as the condition has been seen in typhoid fever, influenza and mumps. Various septicæmias produce pancreatic lesions, but rarely acute pancreatic necrosis. As regards a lymphatic pathway, it may be noted that the liver, bile ducts and pancreas have a closely intermingled lymphatic connexion, but cholecystitis is not always associated with pancreatic necrosis, and many observers conclude that the infection via the lymphatics from an inflamed gall-bladder, liver or bile duct is unlikely to occur. In none of the cases of Parry and Murray was the gall-bladder acutely inflamed. Regurgitation from the duodenum is possible, just as parotitis may result from an infected mouth by way of Stenson's duct. Parry and Murray record a case in which a child received a blow on the abdomen whereby the intraabdominal pressure was raised enough to cause regurgitation of the bile or duodenal contents up the pancreatic duct determining acute necrosis. Most observers consider that bile regurgitating into the pancreatic duct is an important factor in causing acute necrosis. Parry and Murray point out that there are three types of variation in the terminations of the pancreatic and common bile ducts. The pancreatic duct may empty into the dilated portion of the common bile duct (Vater's ampulla) eight to ten millimetres from the apex. A sufficiently large gall-stone lodged in the ampulla might convert the two ducts into a continuous channel, permitting regurgitation of bile up the pancreatic duct; or both ducts may be contiguous, their ends opening into the ampulla one or two millimetres from the apex. In such an event a stone large enough to become impacted at the apex would close the pancreatic duct and prevent regurgitation. In the third type both ducts open separately into the duodenum, and it does not seem possible for any stone to convert the ducts into a continuous channel and permit regurgitation of bile into the pancreas. E. W. Archibald showed by experiments that spasm of the sphincter of Oddi can be produced, and he thus explained some cases of regurgitation of bile up the pancreatic duct. But neither spasm of this sphincter nor impaction of a stone in the termination of the common bile duct explains the cases which occur when the ducts open into the duodenum separately. Two of the cases here recorded had that anatomical disposition.

We can only agree that the exciting agent of acute pancreatic necrosis and the pathway followed

are not understood. While infected bile or duodenal contents injected under pressure into the pancreatic duct of animals may induce acute necrosis of the pancreas resembling that of man, there is no adequate explanation of cases occurring when the pancreatic duct and common bile duct enter the duodenum separately. Cholecystitis and biliary calculi are commonly, but not invariably, associated with acute pancreatic necrosis. Extension from a gastric or duodenal ulcer is a possible but very remote contingency.

PERFORATION OF CANCER OF THE STOMACH.

A STUDY of perforation of cancer of the stomach has been published by Ian Aird, of the Royal Infirmary, Edinburgh.¹ This author describes one case of his own, he summarizes seven cases that occurred in the Edinburgh Royal Infirmary, and he examines 71 cases collected from the available literature. From this study several interesting points emerge. Two-thirds of the cases are described by Aird as fulminant. The symptoms closely resembled those of perforated peptic ulcer, and, as Aird states, a diagnosis of perforation of the stomach should in these circumstances be made. It is remarkable that in one-fifth of the cases there was a complete absence of abdominal rigidity. The obvious conclusion is that a correct diagnosis is likely to be made only if the gastric tumour has been previously recognized. In one-third of the cases perforation was "more or less silent"—pain and abdominal rigidity were slight or absent. In discussing these cases Aird points out that perforation should be suspected in the presence of rapid ascites or collapse when a history suggestive of gastric carcinoma can be elicited. Of the patients with fulminant perforations only 46% gave a history of less than a year's indigestion; and of those with "silent" perforations 87% had dyspepsia of this short duration. The longer history tended to be associated with high gastric acidity. From these findings arguments regarding the supervention of malignant change on simple peptic ulcer might be based. Aird would appear to regard cancer supervening on a simple ulcer as a common occurrence, for he distinguishes between this type and cancer not preceded by simple peptic ulceration. What he describes as atypical perforation in the latter type of case may not, of course, be due to absence of previous simple ulceration. Though some observers will not accept the ulcer-cancer sequence, Aird's observations are at least suggestive. From the ulcer-cancer point of view, however, as well as from that of perforation *per se*, Aird's paper would be more convincing if it were not written in a slovenly manner. His perforated tumours complain of indigestion; his fulminant perforations give a history of indigestion; and he has "two silent perforations whose test meal had been examined". This type of jargon is irritating.

¹ The Canadian Medical Association Journal, December, 1934.

² The British Journal of Surgery, January, 1935.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Regeneration of the Uterine Mucosa in Connexion with Myomata and Endometriosis.

DE SNOO (*The Journal of Obstetrics and Gynaecology of the British Empire*, August, 1934) discusses the regeneration of the uterine mucosa in connexion with myomata and endometriosis. He is of the opinion that the endometrioses are not formed from remnants of the Wolffian body nor from coelomic epithelium, nor do they arise, in his opinion, from endometrium that has been displaced from the uterus by the Fallopian tube and implanted on the peritoneum or by being drawn along the lymphatics. He considers that they are found only in regions where in an early period of life of the embryo the Müllerian ducts are formed, and never outside of them. With de Josselin de Jong he has put forward the theory that some of the mesenchyme cells from which the uterus has developed remain undifferentiated, and that from these cells the endometrioses originate. The author refers to the development of the circulized ovum in regard to the cells of the genital organs. The cells which are associated with the development of the uterus are given the special name of genitoblasts, the mother cells. These cells seem to be capable of developing into a normal uterus with the muscle and gland cells arranged in their proper order. A study of the endometrium in the pregnant uterus shows great differences in cells, both individually and according to the duration of pregnancy. The author concludes that the uterus is a very special primitive organ, having a great number of undifferentiated cells, genitoblasts, which are of great physiological importance. While these cells in the embryonic life form the uterus, with its ligaments, later on they serve to provide material for the formation of the wall of the uterus in pregnancy and for the regeneration of the endometrium in the puerperium. And under pathological conditions they can give rise to the formation of myomata, adenomata, endometrioses and adenomyomata. The genitoblasts depend entirely on the action of the ovaries. For the normal development of the uterus in embryonic life normal ovaries are necessary, and when at a later period of life the function of the ovaries is eliminated, the myomata stop growing and the endometrioses disappear, as at the menopause.

Friedman Rabbit Ovulation Test.

A. G. KING (*The Journal of Laboratory and Clinical Medicine*, July, 1934) reports 103 rabbit ovulation tests carried out with respect to 86 women, and reviews the literature to date,

analysing 4,515 cases presented by 34 authors. Technique, percentage accuracy, false results and the types of cases are considered. The gross uncorrected error is 3.9%. False negative findings are attributable to limitations of the test (82), admitted faulty technique (13), and unexplainable causes (54). The last-mentioned group with 26 false positive findings amounts to 1.8%. A negative reading does not rule out early pregnancy. Positive results have been obtained ten to twenty days after a known fruitful intercourse, but in seven cases reported the test remained negative until the fourth or sixth month of pregnancy. Once pregnancy is established the result of the test will remain positive only so long as live chorionic tissue is in biological contact with the mother. In complete abortion, as in normal puerperium, either a negative or a positive result may be expected from twenty-four to seventy-two hours after delivery. After the fourth month death of the foetus may not destroy the hormone capacity of the placenta. In ectopic pregnancy a positive reading indicates that live chorionic tissue has been in existence within the last twelve hours; a negative test means little. In hydatid mole and chorion epithelioma perfect satisfaction is expressed in all reports. Cancer of the uterus is occasionally positive to the Aschheim-Zondek test, but is usually reported as giving a negative response to the Friedman test.

Ovarian and Uterine Grafts.

MAX CHEVAL (*The Proceedings of the Royal Society of Medicine*, August, 1934) has carried out research on the value of ovarian and uterine grafting. He is satisfied by his recent work that there is much value in the operation of ovarian grafting. In his paper he summarizes the history of a number of women in whom implants have been made of their own ovarian tissue while the operation of removal of both ovaries was being performed. The later state of these patients is contrasted with that of women who have not had any ovarian tissue left after such an operation. When the uterus was left in position, menstruation was reestablished in over 80% of patients subjected to grafting. The author holds that the autogenous grafts of ovarian substance are activated by hormones produced by the mucosa of the uterus. He therefore concludes that grafts of the uterus should be made in conjunction with ovarian implants whenever this is possible. He has confirmed this opinion by carrying out a series of experiments on animals. The author hopes that at some future date chemical science may provide a preparation which, when given by mouth, would prove a complete substitute for the secretions of the missing ovaries. Until that day arrives, ovarian grafts are the best remedy. He does not consider that there is any risk of malignant

degeneration in the artificially formed endometriomata. There is no recorded instance of malignant change in accidental endometriomata in laparotomy scars.

Methods of Tubal Sterilization.

G. HASELHORST (*Deutsche Medizinische Wochenschrift*, September 21, 1934) describes in some detail the indications for tubal sterilization on eugenic grounds. Such operations should be simple, of low operative mortality, be free from early or late post-operative complications and, above all, show a high percentage of success. Simple ligation of the tube, no matter with what material, is useless, nor is simple resection with infolding of the ligated ends much better. Only two methods are safe—excision of the cornual end of the tube and a portion of the uterus, or tubal compression by the Madelener technique. Cornual excision is by no means simple and frequently is associated with adhesions. Madelener, by crushing the tube in a powerful clamp, has invented a bloodless method which has stood the test of time. Haselhorst has collected 2,487 cases with only four failures. The method depends for its success on the formation of fibrous tissue after all coats of the tube have been crushed.

Vaginal Hysterectomy.

MORRIS DATNOW (*The Proceedings of the Royal Society of Medicine*, April, 1934) summarizes his views on the value of vaginal hysterectomy. He states that the advantages of vaginal abdominal hysterectomy are that there is less shock, there is a more rapid convalescence, and the patient's stay in hospital is shortened; there is better drainage; the absence of a scar has a psychological effect upon the patient, and many will more readily submit to operation when informed that their abdomen will not be opened; there is no risk of incisional hernia; a prolapse operation can be combined with the hysterectomy and thus the necessity for a double procedure may be saved; and post-operative care of vaginal hysterectomy patients is simple. The contraindications to the removal of the uterus *per vaginam* are dimension and fixity, the limit of size being that corresponding to a full-term foetal head. If the uterus is fixed by old inflammation or by a previous operation, the operation is difficult and dangerous. The author recommends that carcinoma of the body of the uterus be treated by abdominal hysterectomy. The indications for vaginal hysterectomy are: a bleeding uterus or when a hysterectomy is indicated in a very stout woman, provided that the uterus is not too large or fixed; conditions in which there is skin disease of the abdomen; a septic uterus after criminal abortion; an inversion of the uterus; radical treatment of carcinoma of the vagina; radical treatment of carcinoma of the cervix and

carcinoma of the body in certain cases, with special precautions. The three main methods of approach are given by the author as: (i) "from the uterus", that is, the fundus is first delivered and ligation of the vessels is commenced from above; (ii) by splitting the uterus and then removing each half separately; and (iii) from the broad ligaments. The author gives the steps of the operation, and the paper concludes with a discussion.

OBSTETRICS.

Early Rupture of the Membranes in the Treatment of Eclampsia.

W. STROGANOFF (*The Journal of Obstetrics and Gynaecology of the British Empire*, August, 1934) advocates early rupture of the membranes in the treatment of eclampsia. By early rupture is meant when the os is closed or not larger than 5.0 centimetres (two inches). Rapid delivery occurred in most cases and there was a definite diminution in the number of fits and also in their severity. The author believes that the favourable results may be explained by the decrease in the intra-abdominal pressure, resulting in better oxygenation of the organs. It has been the practice of the author to rupture the membranes after dilating up to 18 to 23 "Hegars" in those patients in whom palliative treatment has failed to produce an improvement. Venesection and other methods of treatment were employed in treating all these patients.

The Prognosis of Severe Toxæmias of Pregnancy.

L. SEITZ (*Monatsschrift für Geburtshilfe und Gynäkologie*, November, 1934) discusses in detail the prognosis as regards future pregnancies after a severe attack of preeclamptic toxæmia or eclampsia. The symptoms likely to be present after such an attack are oedema, increased blood pressure and possible cerebral complications, such as psychoses and headaches. From extensive investigation of liver function tests the author is inclined to place most reliance on the bilirubin rather than the levulose test, but on the whole such tests are not of great value in determining whether another pregnancy should be permitted. Much more importance can be placed on the renal efficiency tests. In general, after preeclampsia or eclampsia pregnancy can be permitted, provided there has been an interval of six to twelve months during which tests have proved satisfactory. But in cases in which the blood pressure remains raised and albumin and casts are found in the urine, pregnancy must be prevented. In those cases in which the amount of albumin is small, when there are no casts in the urine, when blood pressure is normal and renal tests give satisfactory results, the author is inclined to allow another

pregnancy to occur. However, if symptoms of chronic nephritis be noted, pregnancy must be forbidden and, if present, immediately interrupted. Finally, some cases occur in which every test gives a negative result and yet eclampsia occurs during a subsequent pregnancy. Such patients can be allowed to undergo another test of pregnancy, which must be interrupted if any symptoms arise during its progress.

Renal Functions in the Toxæmias of Pregnancy.

K. DE SNOO (*Monatsschrift für Geburtshilfe und Gynäkologie*, August, 1934) discusses the value of blood nitrogen estimations in the treatment and prognosis of the toxæmias of pregnancy, especially eclampsia. He considers that little change is noted in mild cases or those of chronic hypertension, but more pronounced alterations are seen with eclampsia. The blood nitrogen rises by the second to fourth day and then drops to normal levels, whether the patient be delivered or not. The urinary secretion is increased before any increase in the urinary nitrogen output. An increase in the blood urea is not dangerous, and diuresis is of greater prognostic value than the estimation of the amount of blood nitrogen retention. In many cases of eclampsia the renal functions are normal before the onset of fits. Interference with renal functions is probably due to vasomotor disturbances, especially spasm of the arterioles. Retention of nitrogen may also occur without any renal changes; for example, during vomiting. Finally, he considers that the estimation of the blood nitrogen is of great value in determining when to interrupt pregnancy in cases of hyperemesis. An increase is a definite indication to empty the uterus.

Essential Hypertension During Pregnancy.

L. SEITZ (*Monatsschrift für Geburtshilfe und Gynäkologie*, September, 1934) considers that in about 3% of all pregnant women aged from twenty-four to thirty years the blood pressure is raised as high as 175 millimetres of mercury without the presence of oedema or any renal symptoms. In general he divides such cases into two groups: (a) Those in which the increased blood pressure existed before the pregnancy. This is seen in active women between thirty and forty, and the blood pressure may reach a very high level. Rest in bed with a low salt-free diet generally has an immediate effect on the blood pressure and the pregnancy may be allowed to continue to term. (b) The group of real essential hypertension which first occurs during the pregnancy. The symptoms are not so pronounced, and rest and diet are generally sufficient. The author has not seen the blood pressure rise to dangerous levels. The possible causes are discussed and he

is of the opinion that it is due to a hormonal-neural influence, possibly a diminution of cholin and an increase in the posterior pituitary hormone in the blood. Although not common, degenerative changes may be noted in the kidney, liver and brain. Termination of pregnancy is indicated only in cases of preexisting hypertension where the blood pressure reaches a level of 200 millimetres of mercury.

Delivery Without Protection of the Perineum.

S. A. FRAYMANN (*Monatsschrift für Geburtshilfe und Gynäkologie*, October, 1934) surveys the various methods employed in protecting the perineum during the delivery of the head. He has investigated the results obtained by leaving the perineum alone during delivery in a series of 762 cases. For comparison the results in 2,000 cases where the usual technique was employed are appended. When the perineum was unprotected, laceration was 7% more frequent with *primiparæ* than when the usual methods were employed, and 6% more frequent with *multiparæ* under similar conditions. The author considers that morbidity in the puerperium is less in those cases which have been left alone, and that the patients get out of bed earlier. Similarly, the risk of birth traumata to the fetus is slightly less. If this method be employed, care is taken to see that the patient does not hold her breath during uterine contractions when the head is being delivered.

Hormonal Sequelæ of Parturition.

L. NÜNBERGER (*Deutsche Medizinische Wochenschrift*, September 21, 1934) considers that some of the morbidity noted after delivery may be due to deficient action of the anterior pituitary lobe—abortive forms of Simmond's disease. With this condition of the anterior lobe there is always a history of onset following labour: amenorrhœa, general lassitude and inability to perform even light household duties, insomnia and flushings; the speech is slow and monotonous, the hair falls out and dental impaction occurs, the blood pressure is low, the basal metabolic rate is low, and finally the patient becomes weaker and dies from some intercurrent infection. Many of these symptoms have been noted in puerperal women and have been ascribed to various causes, such as severe hæmorrhage during or after labour, or to asthenia. Because of failure to diagnose the real cause, the correct treatment has not been given. Naturally every case is not due to pituitary deficiency, but a careful examination will often disclose this connexion. In such cases very favourable results are obtained from the administration of anterior pituitary tablets, and they should be tried whenever no obvious cause can be discovered.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE WESTERN AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Perth Public Hospital on October 17, 1934, Dr. R. H. CRISP, the President, in the chair. Members of the legal profession in Western Australia were present by invitation.

Sterilization of the Unfit.

PROFESSOR F. R. BEASLEY read a paper entitled: "Sterilization of the Unfit: The Legal Aspect" (see page 295).

DR. D. M. MCWHAE read a paper entitled: "Sterilization of the Unfit: The Medical Aspect" (see page 298).

DR. E. J. T. THOMPSON read a paper entitled: "Sterilization of the Unfit: The Psychiatric Point of View" (see page 301).

DR. R. H. CRISP read a paper entitled: "Some Aspects of Sterilization of the Unfit" (see page 303).

SIR WALTER JAMES said that he rose mainly with the purpose of expressing his thanks to those who had addressed the meeting. When Professor Beasley spoke, those who were lawyers felt to some extent on familiar grounds, and they had a certain knowledge of the phraseology he used. But the other speakers did sometimes get beyond the lawyers. Not that it was difficult to get beyond a lawyer, but he wanted to admit that for that reason he did not follow so closely the arguments the medical speakers used and the reasons they gave for them.

It seemed to him a simple proposition. Why talk about compulsion or consent unless they were first agreed that there were certain cases in which this surgical operation should be applied? He thought Dr. Thompson was a bit gloomy, but even through the clouds there were occasional shafts of sunlight, because he gathered that Dr. Thompson admitted that there were certain cases in which even a doctor would recommend this operation. If that were so, was he not right in saying that medical science would admit that there were some cases in which it ought to be done?

If that were so, then their first efforts should be to have legislation passed that would permit medical practitioners to do the operation and patients to consent to it, when the consent could be given. They would frighten the public unless they stood secure on the one thing which apparently all doctors were agreed on, when there might be cases in which operations should be conducted if consent were given. That, of course, was consent of a person who could give consent.

As to compulsory operations, Sir Walter James did not agree with these doctors hesitating so much. Speaking amongst themselves (not using arguments that would satisfy public opinion as it stood today) he did not agree with them. Surely if a person was an idiot he should not be allowed to reproduce. Surely if a man was a confirmed criminal he should not be allowed to reproduce. The protection of the community demanded that. It might be said that if he reproduced he might reproduce a genius. That was the risk they might run; they did not want to run the risk of producing another one like them. That was a principle on which the compulsory operation should be applied.

Sir Walter James was not concerned so much about the carrier, as medical science in time to come would detect the carrier. Even if it did not, was it not a fine thing in these days, when the population was becoming in every part of the world a bit too great and the task of maintaining the unfit was becoming more and more burdensome, that they might run the risk of stopping a man from reproducing even although he might be producing good men?

He did not think they were very far away—some few million years—from the animals which they were apt to despise. Of course, if he believed that human beings came from heaven—he did not believe they did come from

heaven—most of their passions were not far ahead of the four-footed animals. He sometimes thought the principle of selection might in due time be applied to human beings as to animals. They must not be afraid to face the position; they must not be afraid of asking in the first instance that a law be passed permitting these operations to be performed with consent. They were apt to do that if they dwelt too much on the danger of compulsion. They must wait for public opinion to grow.

Various speakers had pointed out that if public opinion was not behind the law, the law became a dead letter. That, of course, was a commonplace. One never could advance too rapidly ahead of public opinion in this or any other matter. If he might say with diffidence, he would like to see those who believed in this movement (he did not suppose anyone believed in it as much as he did) concentrate on obtaining the law to allow persons to consent to this operation being conducted.

Judgement given on a recent case (*King versus Donovan*) rather qualified the opinion he had formed before, that one of full age and mental capacity should consent to this operation being performed. It had, he thought, thrown great doubt upon it and there was need to move legislation which would make consent sufficient.

He again expressed his thanks for the addresses they had heard and urged that they should concentrate their efforts to obtain legislation to enable this to be done by consent. Perhaps later on they might move for compulsion. They should not allow themselves to be afraid of hurting one or two people if they were fighting for a good principle. Even doctors made mistakes, and it was possible, if they adopted this operation, they would make some slips. But he was satisfied that the doctors would act wisely, and if a man had lived a life that was shown to be unfit, let them avoid the risk of reproducing. Heaven alone knew that the world was full of people and too full of unfit people, and when he said "unfit", that was a word always to be determined by public feeling for the time being.

They knew in their rough way what the unfit was. Let them prevent the risk of his reproducing the species. If they did that, Sir Walter James thought that they would do a great benefit to the community in which they lived.

DR. D. MULCAHY said that there was an old saying: "The law is an ass." He would not be so derogatory to their legal guests that evening as to apply the term "asinine" to their discussions on this matter. But he would say that the discussion certainly as regards the compulsory aspect of sterilization should be regarded as mulish, half asinine (his veterinary knowledge was limited), and he had to apply the same adjective to the medical discussion, because, like the mule, the discussion would not be productive of any good.

Dr. Mulcahy was opposing eugenic sterilization on two or three grounds, and especially the compulsory eugenic sterilization. He maintained that the fact that the State would impose the operation would not render eugenic sterilization any more correct. The State existed for the protection of the natural rights of its citizens and not for the destruction of those rights. By the law of Nature, every human individual had an inalienable natural right to contract marriage and to beget offspring. To interfere with this inalienable natural right would render the individual posterior to the State and not anterior to it, as was the case by the natural law. In other words, by this invasion of the natural rights of man the eugenicists were making easier the subordination of the individual to the State, which was the crime of Prussianism, bolshevism and all that bureaucracy which led to communism.

In this country there was an outcry against the bolshevists because, amongst other things, they deprived their citizens of their inalienable right to their land and home. What was the difference between them and the eugenicists? The integrity of the body was, to say the least, as much an inalienable natural right as the right to property. Thus, even if the State were to sterilize an individual for the welfare of the species, it would subordinate a human being to the benefit of others, and such a procedure, which made a man a mere means for the good of other men, was contrary to natural justice and

contrary, besides, to human personal independence. In a word, eugenists would reduce a human person to the category of stray dogs. While alleging the interests of humanity as a motive for sterilization, they were assailing with intent to destroy one of the most sacred rights of humanity.

Eugenists based their arguments on several matters, several points. Some of them were that a superior family would always produce a superior type, that feeble-mindedness was hereditary, and that the subnormal was unduly prolific. But after listening to all the discussions that night and the Brock report, and to Dr. Treadgold, who, by the way, had been misquoted in a few places, he doubted if there was any truth in those statements. Dr. Mulcahy opposed it on medical grounds. He maintained that they had no more right to sterilize a man than a man had a right to give permission to have himself sterilized.

Dr. H. G. GRAY said that he thought they were attempting too much. They had had several problems brought up in Perth recently. Dr. Gray had been in practice for twenty-seven years, and it was only in the last few years that these problems had been brought before the medical profession.

Recently a resident doctor had told Dr. Gray that he had a girl downstairs who was pregnant. She was not twenty-one, she was an epileptic and had two mentally deficient children being supported by the State. He asked Dr. Gray whether he should perform a certain operation and Dr. Gray said he was not much of a doctor if he said that would not do her epilepsy some good.

Members had been shown two months ago an eye with a cancer in it taken from a baby. The father of this child had one eye. They did not know what his eye was removed for. Another of his children had both its eyes removed. This child had one eye removed and Dr. Gray understood that the other eye would have to be removed. This parent asked for sterilization. Who would refuse him? He had not been refused, and Dr. Gray would like to know if anyone in the room, except Dr. Mulcahy, would think a wrong thing had been done.

These problems were coming up every day, and Dr. Gray thought that it was time they tried to settle some of them. They were talking about 1,000 people. How many people had they in Perth? Would it not be a good thing for Perth if that epileptic woman did not have any more children to put on the State?

Dr. J. V. ARKLE said that Sir Walter James and he had been concerned in a case about two and a half years ago. At that time a woman came to him and asked him to castrate her son. He was approaching puberty and his sexual urge was getting out of control. He was an idiot. He was addicted to masturbation and was in the habit of exposing himself and making suggestions to females. Dr. Arkle told the mother at the time that the legal question would have to be gone into. They told Dr. Arkle that the legal adviser was Mr. Abbott. Dr. Arkle had to get the opinion of two other medical practitioners and advised the mother to see them. Dr. Arkle told her he would look up some literature on the subject. He found out that the operation was being performed in Delhi and Lucknow. Some people seemed to think that unless the penis was removed the operation was no good.

Dr. Arkle took this boy to a private hospital and during the first week the story of the mother was fully confirmed by the nurses. Dr. Arkle did the double castration. He saw the mother later and she told him that the operation had been successful. In view of the meeting that night Dr. Arkle had looked the boy up. He was living with the same people and Dr. Arkle was assured that he had given up his bad habits.

Dr. A. B. ANDERSON said that he did not think anyone could think of the mentally afflicted children without being impressed with heredity. So far two propositions had been mentioned that night, and one was voluntary sterilization. As far as Dr. Anderson could see, there had been no argument whatever put up against it. If a woman had a mentally defective child already, she was of poor stock and her husband was of poor stock, and one thought

that there was a great probability that other children of hers would be defective; if she came and wished to be sterilized, why should she not be sterilized? Dr. Anderson could not see any reason that could be put up as to why she should not.

With regard to compulsory sterilization, Dr. Anderson thought that the time was not ripe to deal with that as yet. He thought first of all they would have to educate the public. After all, it had been said that they should not do anything at all to one section of the community in order that another section might benefit. Was not that what was going on every day? Life was more or less a survival of the fittest. Why should not the fittest survive? The Brock report, he thought, summed the matter up in a nutshell. After all, the people selected to go into the matter were the most suitable.

Dr. C. BRYAN said that he disagreed with the previous speaker who said that there was no need for the discussion. The very size of the meeting was evidence of that need, and he thought that it was a great pity the general public could not be present to listen to some of the problems that confronted them when they came to discuss the subject. To the man in the street it seemed a very simple matter to define an "unfit" person.

Some time ago Dr. Bryan had published a book dealing with matters of sex, and he touched on the subject of the debate. Before doing so he had read up all the literature he could find, English, American and Continental, and the more he read the more interested he became, because the authors contradicted one another with gusto. He was reminded of this that night when he heard figures quoted from the Brock Committee report. He had read that report and he could not understand the smallish figures quoted in it in regard to the incidence of the operation in the United States of America, for when he was delving into the literature he came across a statement by a well known Californian surgeon, published widely in the Press and commented upon in the medical Press, that he had in his public capacity sterilized some 16,000 people, mostly young females, but was now "beginning" to have a doubt as to whether he was doing the right thing.

At the same time he came across something else that was very pertinent to the discussion; it warned them to be very careful in making dogmatic statements. This was a report issued by the American College of Surgeons on the progress of surgery in America during the first fifty years of the United States. That document made amusing reading today, but it was far from amusing then to some people. The author, one of the most distinguished surgeons of his day, wrote down that for twenty years he had been opposed to castration as a prevention for madness, but that within the last few years he had been converted to that method of treatment as a means of lessening the influx into the lunatic asylums of his country.

They were that night facing the problem as to who was or was not a defective. But for himself the problem was not to decide who was a defective, but to decide on whom they should confer the power to define a defective. So many of those present had different views on the subject. He wondered how many present knew that during the Great War a member of Parliament from Western Australia asked the Federal Prime Minister in the House of Representatives if he would consider the advisability of sterilizing every man who would not enlist. That was his definition of a defective. Then they had a legal speaker taking the case of a confirmed criminal and asking how anyone could oppose the sterilization of this class of person. Dr. Bryan was not so much concerned with criminals as he was with another class of case. The hæmophilic had been mentioned. If anyone was to be sterilized as a carrier of disease, there were many to say that it should be a carrier of that disease.

They had touched on history and heredity in the discussion. They could not avoid it. But his problem had always been as to how far back they should trace a family history. They were lucky if they could go back a century with any of their patients; but what was a century? He had once counted up the number of direct ancestors he had in the past thousand years or, rather, he had counted them back to William the Conqueror. In

that period he found that he had inherited the blood of sixty-five thousand million grandfathers and grandmothers. The figure was colossal, but correct, and they could all boast the same number. That meant, if it meant anything at all, that they all had inherited every kind of trait, good and bad, in the human race. And since prostitutes were always freely mentioned in any discussion on sterilization as one of the first class of defective doomed to be sterilized for the good of the community, he would remind those present that William the Conqueror was himself the son of a prostitute. It had not seemed to do him or English history much harm.

Still another point in regard to this hereditary business was that some few years ago it had been suggested to him as a line of research that he should take the names of 100 men "who had made good" and trace their birth and upbringing. He was domiciled in London at the time and the suggestion interested him. He set to work to get his 100 "men who had made good", but he had only got a dozen or so in hand when two of them—one of them almost the richest peer in the land and the other a banker and financial wizard—were thrown into gaol for the meanest crimes.

He had to refer to the case quoted of the highly sexed young woman whose parent desired her to be sterilized and who was herself anxious for it to be done. The fact that she was under twenty-one raised the question as to whose permission would be essential in that case, but that aspect was secondary to the medical problem presented. He had had similar cases. A powerful motive actuating those who urged the operation was the quite understandable objection to the victim planting a baby sooner or later on the parental doorstep. But Dr. Bryan had yet to learn that sterilization lessened or killed the sex instinct in such people, and to sterilize them therefore would leave them free to roam where they would and free also to pick up and disseminate those very diseases against which it was their duty to guard the public.

He considered that it should be made plain to the non-medical portion of the meeting that sterilization, which had been referred to throughout as an "operation", was at the moment an operation. The day was certainly coming, however, when the injection of certain substances would obviate an operation. Even at the present time exposure to X rays effected the purpose.

MR. N. P. LAPPIN said that from the legal point of view he agreed entirely with Sir Walter James: to take a small bite of a cherry first and get the voluntary act made legislation.

One aspect of it had been only lightly touched on, and that was the consent that was necessary. It was all very well for an able-bodied man with full faculties to consent. For example, he himself might consent. He could give his consent, but who was going to give the consent for the infant, the minor and the feeble-minded? He thought Sir Walter James would agree with him that that consent could not be given by the person who must be operated upon.

There was one question he would like to ask of his medical friends apropos a case he had in the Children's Court recently. A man of sixty was charged with interfering with girls in Claremont. They were discussing the question of an operation from the point of view of the damage he might do to those girls by his act. They were wondering at the time whether, if there was an operation, there would be any urge left in that man to go on with his old practices when he came out of prison. Mr. Lappin was of the opinion at the time that the urge would be still there.

He had that opinion from a recent experience of a wrestler who some years before had received a letter from a girl claiming maintenance for a child that was about to be born. They asked the man whether he had been out with this girl and he admitted that he had. They told him point blank that he did not have much chance of fighting the action. He told them to keep on writing, denying liability, and he would tell them what to say later on. Ultimately he admitted that in a wrestling match some

years before he had had a certain part crushed off. On that point Mr. Lappin would like advice.

DR. M. K. MOSS said that he would like to congratulate the previous speakers, particularly Dr. Thompson. He thought Dr. Thompson's paper was most interesting. To Dr. Moss one of the difficulties in regard to sterilization would be that they would have to pass laws regarding the type of people. Various governments of various States would come in and, for instance, a labour government might come in and think capitalists should be castrated. That was exaggerating it, but there would be different points of view when different governments came in. A thing illegal under one government might be right under a government of another kind.

Dr. Moss agreed with all the previous speakers that compulsory sterilization or, in cases of sex perverts, castration, would make it a very difficult point. As regards voluntary sterilization, Dr. Moss thought that the meeting should pass some form of motion approving of it. He had heard of a man recently who felt an absolute urge to commit indecent offences on young boys and eventually he was able to get castrated. He had gone to the doctor when he left the hospital and felt a happy man. He had felt sure disgrace hanging over him all the while.

Those cases in which it was voluntary on the part of the sane man (except he was a sexual pervert) should be assisted by medical men. As regards the case Dr. McWhae quoted, in which a girl was oversexed, unless she was mentally defective, Dr. Moss did not think because she was a minor that her parents should take away from her the power of reproducing her kind. It might be that the flame which burnt brightly at the start of puberty would gradually calm down.

Dr. Moss would be strongly against interfering with persons of that sort. It might be possible to segregate them. As regards voluntary sterilization for the diseased, he would be heartily in agreement and thought the majority of them would be.

DR. B. HUNT said that there was one other way in which this matter might be looked at. There was probably no medical practitioner in the room who had not at some time or other advised a man or woman against marriage. They might give that advice in the interests of the health of the patient. On the other hand, they might consider the interests of society as a whole, because one felt that the children of the marriage would not be useful social assets, as in the case of mental defectives, and one might also have in mind the interests of the child himself. It was not a fair and reasonable thing that a child in all probability would start very greatly handicapped, and anything they could do to prevent such a child being brought into existence they should do. In giving advice that marriage should not be undertaken by those people they were taking a definite step in that direction.

Reasonably often their advice was not taken, not because those people wanted to have children, but because they wanted to have the comfort of sexual intercourse and the support of a husband and home. They would be quite happy not to have children, but they were not prepared to give up the other things that made marriage simply at the suggestion of a medical practitioner that if they did they would have children who would not be an asset to themselves or to the State.

Dr. Hunt suggested that if those people were able to be told of the alternative suggestion to the effect that they could marry, if they wished, after sterilization, a large number of them would be willing to take advantage of the suggestion. Dr. Hunt suggested that those people who had at any time advised people against marriage in the interests of posterity or in the interests of society and who had at the same time opposed voluntary sterilization were not consistent.

MR. M. E. L. CANTOR said that if any motion was carried in connexion with voluntary sterilization it might be necessary to consider that it should not be done merely at the request of a person who was able to give an adequate consent, but also, in addition, in pursuance of examination by a board. He was mentioning this because

it might not be a *bona fide* consent in the manner in which they were discussing it that night. It might be purely for selfish reasons. It might be a matter of fanaticism, and sometimes it might quite possibly be a thing done out of jealousy on the spur of the moment. Mr. Cantor thought that there should be in any resolution the consent of a board in addition.

Dr. C. H. LEEDMAN said that he had listened to the various discussions. The gathering must be a fairly representative meeting of the medical men, and it would be a pity for such a meeting to disperse without some practical recommendation being made. It would be better, even if it were only on a small scale, than going away without doing anything.

A member said that in case there was a motion put forward he thought their non-medical colleagues should be informed of it. The day was coming when surgical operations would not be necessary to bring about sterilization. It would come about by the injection method, and that was going to come about in the lifetime of many of those present.

Sir Walter James moved:

That in the opinion of this meeting it is desirable legislation should be passed to allow this operation to be done by consent.

Dr. Thompson said that in the Brock report there were very definite proposals with regard to the safeguards which should be taken. He had not referred to them earlier. He would like merely to modify Sir Walter James's motion, and that was to the effect that the meeting approved of the recommendations of the Brock committee.

Sir Walter James suggested that if such a resolution were passed the Branch could take it up and could then follow the Brock recommendations.

The Chairman, Dr. Crisp, said that they did consider having the resolution framed, but there was so much detail that had to be gone into. He thought that any motion would be on very general lines.

A member suggested that Sir Walter James should add: "with proper safeguard/s".

The following resolution, moved by Sir Walter James, seconded by Dr. Hunt, was put to the meeting and carried with one dissentient:

That this meeting approves of the principle of voluntary sterilization with adequate safeguards.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Clemens, Kathleen, M.B., 1928 (Univ. Sydney),
Tamworth District Hospital, Tamworth.

Correspondence.

APPENDICITIS AT A PROVINCIAL HOSPITAL.

SIR: I have read with interest Dr. Keith Ross's paper on this subject, and as he quotes figures from my paper in the journal of September 29, 1934, I should like to make a few comments.

The mortality rate for acute appendicitis depends on: (i) the patient, who may err through self-medication and delay in calling the doctor; (ii) the diagnostician, usually a general practitioner, who may err through delay in diagnosis or admission to hospital; (iii) the operator, presumably a surgeon, who may err in judgement, technique or treatment before or after operation.

The Geelong figures show that the work of the operators is done as well as but no better than it is done in the metropolis. This must be judged by the results in cases with general peritonitis or abscesses, which compare almost exactly with the Alfred Hospital results.

Hospital.	Mortality Percentage.	
	General Peritonitis.	Abscess.
Geelong Hospital	16.1	6.0
Alfred Hospital	16.4	6.5

The total mortality of any series depends on the proportion of these dangerous cases, and the two series compare as follows:

Hospital.	Mortality Percentage.	
	General Peritonitis.	Abscess.
Geelong Hospital	5.1	2.8
Geelong Hospital, excluding catarrhal cases ..	9.3	5.1
Alfred Hospital	10.8	17.2

The catarrhal patients do not die, even if they are not operated on and, on account of the shortage of beds, very few of them are admitted urgently to the Alfred Hospital, and, if they are, it is my practice, and that of most of my colleagues, to defer operation to some convenient time, so that in our records most of these cases are classified in the interval group. In reviewing the hospital records I deliberately excluded 235 of these cases and endeavoured to include only cases in which operation was urgently needed, and I therefore feel that for purposes of comparison with my figures this type of case should be excluded from the Geelong series. The mortality of the remaining 331 cases then becomes 3.3%.

There is still a balance in favour of Geelong, and the credit for this should, I think, be given to the diagnosticians who send the patients to hospital.

The very low incidence of abscesses, even in the corrected figures—5.1%, compared with 17.2% in my series—is evidence that operation is usually performed earlier in Geelong. Incidence of abscesses rises with delay, and after the fourth day is considerably more than 50%. On the other hand, serious general peritonitis has its greatest incidence in the first three days.

The credit for earlier admission to hospital must be given to the general practitioners, but perhaps the better living conditions of the people enable them to call the doctor earlier and help them to fight their infection.

The importance of this factor is illustrated by comparison of the Melbourne and Alfred Hospital figures. The Melbourne Hospital drains the poorer industrial suburbs, and the patient's admission frequently depends on the judgement of a harassed and overworked practitioner. The Alfred Hospital drains a somewhat better class area, and the practitioners south of the Yarra have on the whole more time and less worry.

Yours, etc.,

12, Collins Street,
Melbourne,
February 14, 1935.

C. J. OFFICER BROWN.

Post-Graduate Work.

NEW SOUTH WALES PERMANENT POST-GRADUATE COMMITTEE.

THE New South Wales Permanent Post-Graduate Committee announces that lectures will be delivered by Dr. D. C. Balfour (Professor of Surgery, the University of Minnesota, surgeon to the Mayo Clinic), and Dr. M. S. Henderson (Professor of Orthopaedic Surgery, the University of Minnesota, surgeon to the Mayo Clinic), at

the Robert H. Todd Assembly Hall, British Medical Association Building, 135, Macquarie Street, Sydney, at 8.15 p.m. on March 13, 1935. The subject of Dr. Balfour's lecture will be "The Management of Lesions of the Stomach and Duodenum", and of Dr. Henderson's lecture, "Fractures of the Neck of the Femur". The fee for attending the two lectures will be six shillings. Any communications should be addressed to the Honorary Secretary, New South Wales Permanent Post-Graduate Committee, 225, Macquarie Street, Sydney.

Books Received.

- CATARACT: ITS ETIOLOGY AND TREATMENT, by C. A. Ciapp, M.D., F.A.C.S.; 1934. Philadelphia: Lea and Febiger. Royal 8vo., pp. 265, with illustrations. Price: \$4.00 net.
- RECENT ADVANCES IN NEUROLOGY, by W. R. Brain, M.A., D.M., F.R.C.P., and E. B. Strauss, M.A., D.M., M.R.C.P.; Third Edition; 1934. London: J. and A. Churchill. Demy 8vo., pp. 456, with illustrations. Price: 15s. net.
- THE PATIENT AND THE WEATHER, by W. F. Petersen, M.D., with the assistance of M. E. Milliken, S.M.; Volume III: Mental and Nervous Diseases; 1934. Michigan: Edwards Brothers. Demy 4to., pp. 391, with illustrations.
- THE PHYSIOLOGY OF HUMAN PERSPIRATION, by Yas Kuno; 1934. London: J. and A. Churchill. Demy 8vo., pp. 278, with illustrations. Price: 12s. 6d. net.
- MATERIA MEDICA FOR NURSES, by L. Oakes, S.R.N., D.N., and A. Bennett, M.P.S.; 1934. Edinburgh: E. and S. Livingstone. Crown 8vo., pp. 347. Price: 7s. 6d. net.
- HIGH BLOOD PRESSURE: ITS VARIATIONS AND CONTROL: A MANUAL FOR PRACTITIONERS, by J. F. Halls Dally, M.A., M.D.; Third Edition; 1934. London: William Heinemann (Medical Books) Limited. Demy 8vo., pp. 390, with illustrations. Price: 15s. net.
- A SYNOPSIS OF SURGICAL ANATOMY, by A. L. McGregor, M.Ch., F.R.C.S., with a foreword by H. J. Stiles, K.B.E., F.R.C.S.; Second Edition; 1934. Bristol: John Wright and Sons. Crown 8vo., pp. 661, with illustrations. Price: 17s. 6d. net.
- CURING CONSTIPATION NATURALLY, by G. Z. Dupain, A.A.C.I., F.C.S.; 1934. Australia: Briton Publications, Limited. Demy 8vo., pp. 128, with illustrations.
- DISEASES OF THE HEART, by J. Cowan, B.A., M.D., D.Sc., F.R.F.P.S., and W. T. Ritchie, M.D., F.R.C.P.E., F.R.S.E., with a chapter on the Ocular Manifestations of Arterial Disease, by A. J. Ballantyne, M.D., F.R.F.P.S.; Third Edition; 1935. London: Edward Arnold. Royal 8vo., pp. 647, with illustrations. Price: 30s. net.
- THE PRACTICE OF REFRACTION, by S. Duke-Elder, M.A., D.Sc., Ph.D., M.D., Ch.B., F.R.C.S.; Second Edition; 1935. London: J. and A. Churchill. Demy 8vo., pp. 383, with 180 illustrations. Price: 12s. 6d. net.

Diary for the Month.

- MAR. 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee; Ethics Committee.
- MAR. 19.—Tasmanian Branch, B.M.A.: Council.
- MAR. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
- MAR. 20.—Western Australian Branch, B.M.A.: Branch.
- MAR. 22.—Queensland Branch, B.M.A.: Council.
- MAR. 26.—New South Wales Branch, B.M.A.: Council, Quarterly.
- MAR. 27.—Victorian Branch, B.M.A.: Council.
- MAR. 28.—South Australian Branch, B.M.A.: Branch.
- MAR. 28.—New South Wales Branch, B.M.A.: Annual.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi, xvii.

- CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.
- DEPARTMENT OF INSPECTOR-GENERAL OF HOSPITALS, ADELAIDE, SOUTH AUSTRALIA: Medical Officers.
- PUBLIC SERVICE BOARD, SYDNEY, NEW SOUTH WALES: Junior Medical Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 297, North Terrace, Adelaide.	Office of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 295, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

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